

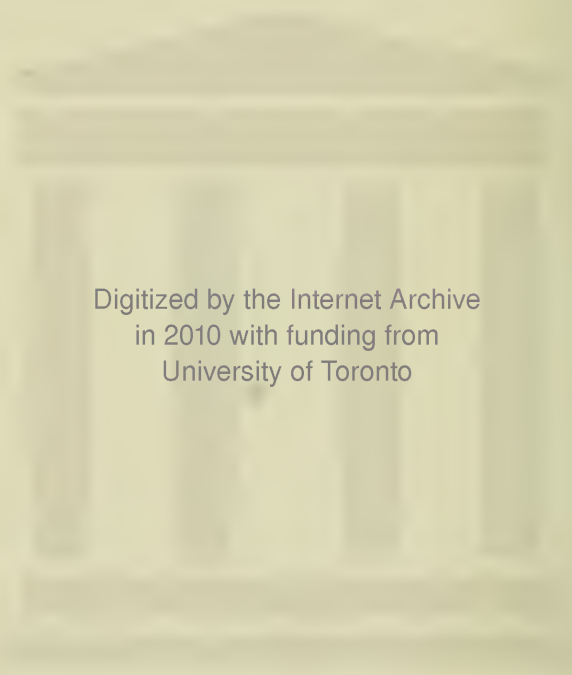




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A N  
A T T E M P T

Towards a

Natural History  
O F T H E  
FOSSILS of ENGLAND;  
I N

A CATALOGUE of the *English* FOSSILS  
in the COLLECTION of

J. WOODWARD, M. D.

Containing

A DESCRIPTION and HISTORICAL ACCOUNT  
of each; with Observations and Experiments,  
made in order to discover, as well the Origin  
and Nature of them, as their Medicinal, Mecha-  
nical, and other Uses.

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PART I.

Of the FOSSILS that are real and natural:  
*Earths, Stone, Marble, Talcs, Coralloids, Spars,*  
*Crystals, Gems, Bitumens, Salts, Marcasites,*  
*Minerals, and Metals.*

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TOME I.

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L O N D O N:

Printed for F. FAYRAM, at the Royal Exchange; J. SENEX, in  
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noster-Row. M.DCC.XXIX.

1790  
1791

T H E

## Publisher to the Reader.

**D**R. WOODWARD has been so full in his *Prefaces* to these *Catalogues*, and in his *Dissertations* on the several Parts thereof, that he has made it in a manner needless to say any thing more about them.

It may be, however, proper to observe, that the *Catalogue* of the *first Tome* of the *English Fossils*, in the Cabinets A and B, contains an Account of such as the *Doctor* bequeathed by his *Will* to the University of *Cambridge*; and that the *English Fossils* in the Cabinet C, and the *Foreign* ones in the Cabinet D, described in the *second Tome* of the *Catalogue*, are those which He has ordered to be disposed of, and are now to be sold.

Both these *Collections* are not only extremely choice and curious, but (what is more surprizing) are *compleat* in their kind. They contain each of them a great Variety of all sorts of *Fossils*; especially the Latter,

which the *Doctor* procured from all the known Parts of the Globe, with a Trouble and Expence more than sufficient to discourage any other body from attempting a Work in which he so happily succeeded. He succeeded indeed, but it was not without having carried it on for a Course of near forty Years, with a Passion for the Improvement of Natural Knowledge in general, and with a particular View to evince the Universality of the Deluge; which *they* prove, indeed, by ocular Demonstration.

A Collection of *English Fossils*, if a Man uses a proper Diligence, and will not scruple the necessary Expence, may possibly be made in the space of eight or ten Years; but to make such a Collection of *Foreign Fossils*, as are exhibited in these *Catalogues*, will require an Age, and is not to be done without an universal Correspondence, and an inconceivable Expence. This is necessary, whatever the *Exemplars* are; but to make a Collection of such choice and curious ones as these, requires likewise an exquisite Judgment, not above one in ten, perhaps, of the Bodies collected having been admitted by the *Doctor* to make part of it, whilst the rest were rejected for being defective in something requisite to render them fine *Exemplars*.

'Tis really amazing, how, amidst the continual Business of his *Profession*, and a Variety of other Avocations, he could find time to maintain all his Correspondencies, collect so fine a Library, and so vast a Number of *Fossils*, finish so many Pieces as he has printed and left in Manuscript, and make himself Master of so many different Sciences. Nothing can account for it, but his constant and unwearied Application to his Studies, which took up all the Time that he could call his own; and which he pursued to the last Moments of his Life, for several Months that he was confined to his Bed, with uncommon Assiduity and Success; he having wrote his Method of *Fossils* during that Space, and being actually engaged in the printing of it at the Time of his Death.

This was a Work exceedingly wanted in the World, yet scarce ever attempted, and never executed before. Few or none, indeed, were equal to it; nor could any body have been qualified for it without a long Course of Enquiry, and accurate Observations, and such a thorough Insight into the Nature and Kinds of *Fossils*, as enabled the *Doctor* to methodize them according to their several *Species*, and reduce them into



a Science. We may now justly expect considerable Improvements in the Knowledge of this Part of Nature; and the Method, which he has publish'd, will make these *Catalogues* exceeding useful, and serve for a Direction to any one that has a *Goût* for the like Studies, and is determin'd to make his Collections with such a *Choice*, and his Observations on them with such an *Accuracy*, as may render them most instructive to himself, and most beneficial to Mankind.

As these *Catalogues* have been printed in great haste, 'tis not impossible but the Reader may find in them several Errors of the Press, which he is desired to excuse, and ('tis hoped) will easily correct.





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T H E

# P R E F A C E.

**N**OW, that I have been for some time engaged in Mineral Studies, with no small Application, 'tis a Pleasure to me to find that it has not been wholly without Fruit. One Sample of which I gave in my Essay towards a Natural History of the Earth; which met with so favourable Reception from the Publick, as to give me great Encouragement to proceed. I had indeed, before ever that Work was set forth, drawn up some others in pursuit of that Design: and have since added several more; to which I shall now subjoin the following, which exhibits an Attempt towards a Natural History of the Fossils of England.

This noble and happy Country is extremely fertil, as of those above, so likewise of its Productions under Ground. These it yields in great Number, and Variety: and many of them of extraordinary Excellence, Worth,

*and Use* \*. Nor are there perhaps many, that, either by my own Searches, or the Diligence of my Friends, I have not procured Specimens of. There is indeed in this Collection, the far greatest part, if not all those that have been recounted by Writers: and a great Number more that have never been, either described, or so much as mention'd. Not but that this, and indeed every Attempt of this kind, must needs be defective, the Stores of Nature being endless and inexhaustible. Nor can it be suppos'd that the Accounts of the Bodyes, here exhibited, are every where complete, or all the Descriptions of them full and perfect. But any other Man, who shall have Leisure and Encouragement to pursue this Design, will here find Land-Marks and Notices sufficient to conduct himself by, in that so useful a Pursuit.

In order to the forming a better Judgment in this Affair, and making some Estimate of the Bodyes set forth in this Volume, I shall lay a brief Summary of all the several Kinds of them here in view.

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\* See several Instances, p. 2. & 3. *infra*.

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Gravel . . . . .	01	Vitriol . . . . .	04
Stone . . . . .	17	Nitre . . . . .	02
Alabaster . . . . .	01	Sulphur . . . . .	00
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Pebbles, Flints, Agats,		Pyritæ . . . . .	46
	253	Marcasitæ . . . . .	55
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Lodus Helmontij .	52	Copper-Ores . . . .	77
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Belemnites . . . . .	66	Lead-Ores . . . . .	138
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	221	Enhydr. . . . .	24
Vein-Stones . . . . .	11	Mineral Delineations	
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*So great a Variety as fifteen hundred Bodies, and upwards, and each so much differing from other, that in the whole there are scarcely any two alike, in every respect, to be produced within the Bounds of one Country, must needs be allow'd to be very considerable.*

*siderable. All these I have endeavour'd to reduce to Method: and, where the Bodies were capable of such Distinction, cast the various Kinds, with the subordinate Species, into Classes; according to their mutual Alliances, and their Relations to each other.*

*In ranking of them, I have founded my Judgment wholly upon their Nature and Properties, so far as the most rigorous Examination, and the exactest Experiments I could make, laid them open to me; not neglecting, in the mean time, such Notices or Intimations as were given me by their Figure, and exterior Appearance, or any other Phænomena of them.*

*The History, of the greatest Part of these Fossils, is here deliver'd a-part; together with an Account of the Place where every one was found. I should have been glad I could, in each, have also set forth, what I have of several, at what Depth, and in what Manner it lay: among what Matter it was repositied, : as also in what Plenty; along with all the other considerable Circumstances of it. This is follow'd, as far as my other Affairs would permit, by particular Observations upon the Body itself: upon the Colour, the Bulk, the Form, the Texture, the Constitution, the Purity or Mixtures*  
dis-

*discernible in it ; and whatever else occurs worthy of Notice and Remark. Next is set forth the Result of the Experiments, that have been made upon the Body, in order to discover the natural Disposition and Properties of it : its various Medicinal, Mechanical, or other Uses, and the several sorts of Metall, or other matter that constitute it, or are contain'd in it. In fine, upon these Histories, Accounts, and Observations, are founded several Reflections and Inferences relating to the Origin and Formation of the Body : as also to both its past and present State and Condition.*

*This Method I have made choice of as the most plain and simple of all others : and consequently the least liable to mislead me. The exterior Circumstances of many of the Bodyes, while in the Earth, where they are deliver'd, 'tis done with real Care and Faithfulness : and none the least Particular omitted that might give any Information or Light into the Natural History of each. As to the several Phenomena of the Bodyes themselves, they are at this Hour extant : and apparent in every single Individual thorough the whole Collection. And for the Experiments, they were all made with the utmost Exactness and Circumspection ; besides, that several of*

I

*them*



them were repeated more than once. Now the Reflections, that are every where interspersed, being founded intirely upon those Circumstances, Phenomena, and Experiments, are in truth so many Deductions from them: and therefore as much Matter of Fact as Those are, and to be rely'd on with equal Certainty. This is evident at first View: and so incontestible, as to leave no Room for a Man of Understanding to doubt of it. Nor do I see any reason to call in question either the Modesty or Judgment of those who think Natural Truths, when pursued in right Method, capable of being brought to the highest Stability and Demonstration. I only wish I could say, All, who have wrote upon natural Subjects, had pursued that Method: and that both their Observations, and their Reasonings upon them, had not given too just cause to the common Declamations of the Uncertainty of these Studydes. Then again, Some there have been who have reasoned happily and successfully enough upon the Observations they have made; but Those have been too few to make any general Conclusions from: and of Extent and Strength not near sufficient to bear the Bulk and Weight that they have been charged withall. I am far from going about to offer now a

*complete Theory of any of the Subjects here set forth; yet it may not be unseasonable to remark, that none of the Deductions are made from single, or a very few, Instances. The Bodies presented in most of the Classes of this Catalogue are very numerous and various: and found frequently in Parts of the Kingdom, very distant from each other; not to enter here into a Detail of the Particulars of the Catalogue of the Foreign Fossils, which exhibits Samples from even the remotest Parts of Europe, from Asia, Africa, and America; in order to the carrying on the Natural History of Fossils quite round the Globe.*

*I know well there are Those who would have the Study of Nature restrain'd wholly to Observations; without ever proceeding further. But due Consideration, and a deeper Insight into Things, would soon have undeceived and made them sensible of their Error. Assuredly, that Man who should spend his whole Life in amassing together Stone, Timber, and other Materials for Building, without ever aiming at the making an Use, or raising any Fabrick out of them, might well be reputed very fantastic and extravagant. And a like Censure would be his Due, who should be perpetually heaping up*  
*of*

*of Natural Collections, without Design of building a Structure of Philosophy out of them, or advancing some Propositions that might turn to the Benefit and Advantage of the World. This is in reality the true and only proper End of Collections, of Observations, and Natural History: and they are of no manner of Use or Value without it. 'Tis indeed what all intelligent Men would much rejoice to see prosecuted, not only thorough the Mineral Kingdom, but all Parts of the Universe; for the Honour of the great Author of all Things, the Enlargement of our Minds by the Discovery of useful Truths, and the common Good and Interest of Mankind.*





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# CLASS I.

## EARTHS, and EARTHY SUBSTANCES:

*An Extract, in manner of an Index, of the Things chiefly observable in the Bodies set forth in this Class. With the Synoptic Method of all.*

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 Cretaceous Matter in the central Cavities of Flints, c. 258.  
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Iron in Steatites, a. 22.

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*Cimolia alba*, in Fevers. a. 2.

Clay used for the making of Bricks for Buildings, a. 10.

— for making Bricks, that endure the Fire, and are employ'd in making of Furnaces, a. 31.

— for making Tyles, a. 104.

— Tobacco-Pipes, a. 2.

— Pots of all sorts.

— Pots, employ'd in the incorporating Copper and Calamin for the Compofure of Brafs, a. 16.

— Pots, employ'd in the melting the Ingredients of Glafs, that abide the Fire for several Months, a. 6. 30.

A Potter's Earth not inferior to that of *China*, a. 20.

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Earth used for the Casting of Silver, a. 45.

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*Calx nativa*, used for Cement, a. 40.

Of the great Importance and Use of Fullers-Earth in the Woollen Manufacture, a. 10, & seq.

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*Terre verte*, a. 50.

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*Umbre*, a. 65, & seq.

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A Red Earth preferable to that of the *East-Indies*, a. 90.

C. 5. *Various Observations, and Reflections.*

Of the great Excellence, Abundance, and Variety, of the Minerals, Metals, and subterraneous Productions of *England*.

*Salts*, lodged in the Earth, promote Vegetation, by mellowing and relaxing of it, *a. 104.*

*Salts* to be drain'd and carry'd out of the Clay, by means of Water, or Rain, to which 'tis to be expos'd for some time before it be fit for the making Pots, Tobacco-Pipes, Tyles, or Bricks, *a. 104.*

*Red-Ochre*, found in a Vein of Iron Ore, to which it owes its Colour, *a. 90.*

*Steatites*, owes its red Veins to Iron, *a. 22.*

*Terre verte* owes its Colour to Copper, *a. 50.*

*Terre bleüe*, or *Lapis Armenus*, owes likewise its Colour to an Admixture of Copper, *a. 52.*

*Loam. green*, owes that Colour to *Vitriolum Martis*, *a. 102.*

The *Umbres*, *Ochres*, and other *Earths*, and *Minerals*, found in the Fissures, have pass'd the Pores of the *Stone*: and therefore are much finer than those found in the *Strata*, *a. 65. 76.*

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## EARTHS, *and* EARTHY SUBSTANCES.

### SECT. I. Earths *that have more or less of an unctuous Smoothness and Softness to the Touch.*

ART. 1. *Those that adhere to the Tongue, if apply'd to it.*

a. 1. **C**IMOLIA, of a dark lead Colour. This is found near Northampton, and used there for making Tobacco-Pipes.

a. 2. Another Tobacco-Pipe-Clay, of a whitish or very light grey Colour. From Pool, Dorsetshire, *Cimolia alba*. Dr Wyndebank, in a Consultation for the famous Mr. Thomas Papilion in a Fever, told me the *Cimolia alba* was one of the chief *Arcana* of Sir Theodore Mayerne in both intermittent and continuous Fevers.

a. 6. *Argilla*, Clay, of a pale Ash-Colour. From Thurston, Northumberland. The Bed of it is about 3 Foot thick, and lies under several *Strata*, and particularly one of Coal. 'Tis used for making the Pots imploy'd for melting the Glass-Metal at Newcastle: endures the Fire to admiration, and is probably the best for that purpose of any in England.

a. 10. *Fullers-Earth*, of a grey Colour, with a Cast of greenish Yellow. From Wooburn in Bedfordshire.

a. 11. Another Sample, little different, only the Colour is somewhat darker. From Detling, near Maidstone, Kent. This *Fullers-Earth* lay 33 Foot deep; the *Stratum* of it is about a Foot thick. Immediately over this was the *Stratum* of the following *Fullers-Earth*, a. 12. which was about five times as thick as the *Stratum* of this. Above that was a *Stratum* of Loam, abounding with Sand 25 Foot thick, and over all a *Stratum* of common vegetable Mould about 2 Foot thick. The Workmen sink for the *Fullers-Earth* in several Places in the Ground all round, and find the *Strata* of Mould, Loam, and *Fullers-Earth* every where lying in the same Order, and of much the same Dimensions with those



those set forth above. In the *Loam* they find Variety of Sea-Shells, Oysters, Cockles, and the like: as also River-Muscles; which they do likewise sometimes in the *Fullers-Earth*; but those in this last are generally much rotten and decay'd.

a. 12. Another, of a dark grey Colour, approaching to black. From the same Pit.

*Fullers-Earth* is a thing of great Service and Importance. 'Tis a Property of it to imbibe Oyl, Grease, and other unctuous Substances; and the great Use that is made of it, is for the cleansing of Woollen-Cloth. Every body knows how frequently Tar is employ'd, as also Tallow and Grease, in the external Affections and Diseases of Sheep. Nor can the Wooll be work'd, or made up, without being first greased or oiled: All which unctuous Matter must be taken forth again out of the Cloth before it can be worn. Nor is any thing yet known so serviceable to that purpose as this Earth. And as the *Fullers-Earth* of *England* is very various and copious, so it very much exceeds any yet discover'd abroad in goodness. Which indeed is one great Reason why the *English* surpass all other Nations in the Woollen Manufacture: And, to preserve and secure this to the Country, the Exportation of *English Fullers-Earth* is restrain'd by Act of Parliament. This Earth is one illustrious Instance of the Pre-eminency of our Soil, and the Excellency of the Productions of the Earth of this Kingdom above most others. Another Instance we have in *Wadd*, or *Black-Lead*, a Mineral of great Use and Value: Nor is there any of worth yet found out in any part of the Globe besides. The *Amber* and *Jet* of *England* are found in considerable plenty, and are much finer than any I have seen from abroad. Even our *Canal-Cole* nearly equals the foreign *Jet*. Nay, the common *Cole* is infinitely superior both in Goodness and Quantity to any got elsewhere. There are in this and the following Class, various Instances of the Pre-eminency of the *English Earths*, the *Gravels*, the several sorts of *Stone*, *Slates*, *Flags*, and other Bodies that are fitted to various Purposes, and are of mighty Importance in great variety of human Affairs. As are also *Vitriol* and *Alum*, which are found in greater plenty here, than in any other Country; insomuch, that we can sell them cheaper than Foreigners can. Then the *Tin* found in that one County of *Cornwall*, to say nothing of the Excellency of it, is superiour in Quantity to all that is got in the whole World besides. The *Lead-Ore* of *England* yields a great share of Metal, and is found in greater abundance than in any other Country; besides, that it runs kindly in the Fire, with less Trouble and Expence, is better, softer, more ductile and fit for use than the foreign *Lead*. Which yet does not arise from any Peculiarity in the Metal; for Metals of the same sort, when reduced to an equal Purity, are alike, in all respects, in what Country soever they be got: but because the *Spar*, and other extraneous

Of the Excellence of the subterraneous Productions of England.

Matter, incorporated with the *English Lead* in the *Ore*, happens to be of such Nature and Disposition, as to be wrought upon easily and freely to part from it. For the other Metals, *Copper* and *Iron*, *England* likewise affords them in great plenty: and several sorts of their *Ores*, not understood in former Times, have been now lately discover'd by the Diligence and Curiosity of the Searchers into Nature here. To the same Diligence are also owing several Methods of melting and working *Ores*, that are not only new, but far surpass any that ever were in use in foreign Parts, both for Convenience, Cheapness, and Expedition. As to *Gold* and *Silver*, *England* affords both, and in greater Quantity too than is commonly imagined; which several late Tryals have taught me. Then we have *Carnelions*, *Agates*, *Mochoes*, *Onyx's* and *Jaspers*: as also *Topazes*, *Emeralds*, and *Saphyres*, tho' they are not so hard as the oriental. The *Diamond* indeed we want, and some few others of the *Gem-kind*: But, excepting these and *Cinnabar*, which is the *Ore* of *Mercury*, I know no Metal, Mineral, or Fossil whatever that *England* does not yield; so very fertile is it, and happy in its Productions under ground, as well as in those above, and in its Clime and Situation; its Laws, Government and Constitution.

a. 16. *Clay*, of an Ash-Colour, very smooth and fine, and adhering slightly to the Tongue. It abides the Fire well for several Days, and serves for the making the Pots that are used for the incorporating of *Calamin* with *Copper*, in order to the making of Brass. 'Tis got at *Cheame* near *Epson*, *Surrey*.

## ARTIC. 2. *Those that will not adhere to the Tongue.*

a. 20. *Steatites*, white, with Veins of red. From the *Sope-Rock*, . . . . . *Cornwall*. A considerable Part of the Cliff near the *Lizard-Point* consists of this Earth. From several Tryals that have been lately made for the baking and making this Earth into Pots, I am satisfy'd that 'tis not much inferior to that of which the *Porcelain* is made, and that the Pots formed of it would be near as fine, did our Potters understand the Ordering and Management of it so well as the *Chinese* do.

a. 21. *Steatites*, spotted, veined, and variegated with red and white like a *Marble*. From the same Place.

a. 22. *Steatites*, much like the foregoing. 'Tis found among the *Iron-Ore* at *Langron*, *Cumberland*. 'Tis very much harder than when first taken out of the Earth, it having then a Consistence not much more firm than that of Tallow.



## SECT. II. Earths *that are more or less dry, and harsh to the Touch.*

a. 30. **A** Dusky grey Earth, become very hard since it was dug up. Found near *Sturbridge* in *Worcestershire*. Of this they make the Pots in which the Glass-Metal is melted in the Furnaces. If they are well made, they will endure a very intense Fire for three or four Months.

a. 31. Another-like Earth, but rather paler, used for making Bricks for the insides of Furnaces, at the Lord *Derwentwater's* Lead-Works near *Haden-Bridge* in *Northumberland*.

a. 32. A light brown Earth, become now very hard. 'Tis used for polishing, and call'd by the Workmen *Rottenstone*.

a. 33. An Earth of an Ash-Colour, very fine. *Sherborn*, *Gloucestershire*.

a. 40. A whitish gritty Earth, sent by Mr *Morton* with the Title of *Calx nativa*. It makes an excellent Plaster, or Cement, mix'd only with Water, without previous burning. From *Clipston Stone-Pit* in *Northamptonshire*.

a. 45. A loose Earth, very fine, of a brown Colour. Found in *Wooky-Hole*, near *Wells*. 'Tis used by the Silver-Smiths for Casting.

a. 50. A loose Earth, of a pale green Colour. Found adhering to the Sides of the great Copper-Vein at *Goldscalp*, *Cumberland*, being brought by the Water which is perpetually trickling down those Sides. This is the same with what is called *Terre verte*, and doubtless owes its Colour to an Admixture of Copper.

a. 51. More, little different. Found on *Wenskill-Hill* near *Settle*, *Yorkshire*.

a. 52. A like Earth, but of an azure or bright blue Colour. Found together with the former. and used by Painters by the Name of *Lambert's-Blue*. This is the same with the *Lapis Armenus* of the Shops, and owes its Colour to an Admixture of Copper.

a. 55. A loose Earth, of a pale Flesh-Colour, *i. e.* white with a blush of red. Found in small Fissures of a brown soft Stone in the *Skrees*, a Mountain in *Cumberland*.

a. 60. Chalk, from *Greenhyth* in *Kent*. Fine clean Chalk, is one of the most noble Absorbents I know: and most powerfully corrects and subdues acrid Humours in the Stomach; rempering and allaying the Emotions and Ebullitions of them. This property is what renders it so very serviceable in the *Cardialgia*, or *Heartburning*; an Affection of the upper part of the Stomach caused by the ascent of hot acrid corrosive Steams: and in *Diarrhæas* or Fluxes. In the Heartburning, the common People dissolve 3j or 3ij of it in a Glass of Spring-Water, which seldom fails of giving them Relief. Indeed I my self have known it, in some

of the most obstinate Cases of this kind, succeed very happily, where Crabs-Eyes, Pearl, the cretaceous Matter in Oyster-shells, and the other Testaceous Absorbents, availed little. Nor is it less helpful in Diarrhæas. Those who frequent the Sea, and are not apt to vomit at their first setting forth, fall frequently into Loofnesses, which are sometimes long, troublesome, and dangerous. In these, they find *Chalk* so good a Remedy, that the experienced Sea-Men will not venture on board without it. They chiefly make use of that which is contain'd in the Shells of *Echini Marini*; which indeed is usually very fine and pure. These are dug up very commonly in the *Chalk-Pits* on each side the River, at *Purfleet*, *Greenhyth*, and *Northfleet*, where the *Chalk-Cutters* drive a great Trade with the Sea-Men, who frequently give good Prices for these Shells, which they call *Chalk-Eggs*.

a. 62. A loose white Earth, light, and very fine, part of it concreted into little Lumps, and part in a mealy Powder, found in the Slate-Quarry at *Colly-Weston*, *Northamptonshire*. This is the *Lac Luna* of Dr. Plot and other late Writers.

a. 65. An Earth, very fine, and light; almost of the consistence of *Chalk*; but of a dark brown Colour, with a cast of Yellow. 'Tis a sort of *Umbre*, found plentifully in a Vein of *Lead-Ore*, the same in which the crystalliz'd *Ore*, n. 120. was found, in *Arkendale*, *Yorkshire*. I never saw of it elsewhere. Vide a. 76. & 77. *infra*. The *Earths* that are found in *Strata*, are commonly mix'd, foul, coarse, and gross: but this *Umbre*, the yellow *Ochres*, a. 76. & 77. and the red *Ochre*, a. 90. consist of Matter extremely small, subtle, and even impalpable. Indeed, being found in the perpendicular Fissures of the *Strata*, it could not be otherwise: for all the Matter that composes them, must have passed the Pores of those *Strata*, before it could arrive at those Intervals; which it could never have done, had it not been very subtle and fine. This Constitution of these *Earths*, renders them far above all others fit for Colours for the use of the Painters.

a. 67. Another, of a dark brown Colour, with a small Cast of red, and thick set, with bright shining Sparks extremely small. Out of a Fissure of a Mountain near the *Skrees*, *Cumberland*. There is *Iron-Ore* frequently found in the Fissures thereabouts.

a. 68. Another, black, out of the same Fissure.

a. 69. Another, likewise black, but with Specks of white and red, found in large Masses upon the top of a flat Mountain, near . . . . . in *Cumberland*.

a. 75. *Yellow-Ochre*, very fine, from *Shot-over-Hill* near *Oxford*. This has been wash'd. The *Ochre* here constitutes a *Stratum* of 3 or 4 Inches thick, about 10 Foot deep. Over it, in Sand, lie numerous ferruginous *Geodes*, holding in them some *Ochre*, others *Sand*. See one of these among the additional *English* native Fossils, b. 79. Confer. a. 85. *infra*.

a. 76. *Ochre*, very fine, of a deeper Yellow, found in the same Fissure with a. 65. In sinking the Shafts for Lead, at about the distance

distance of half a Mile, they pass a *Stratum* of Coal about a Foot thick. *Vid. a. 77. infra.*

a. 77. Another Sample, more harsh, and likewise somewhat harder, brought by the Water that runs out of the Adit of a Coal-Pit at *Broughton*, near *Cockermouth* in *Cumberland*, and settled down in Cavities at the bottom of the Adit, over which the Water passes. This is common in the Adits of many of the Coal-Pits in the *North*. I take it to be the ochreous Part of the Coal, drain'd out by the Water, the bituminous Part never settling, but appearing upon the Surface of the Water, and swimming off. *Vide a. 65. & a. 76. supra.*

a. 78. *Yellow-Ochre*. coarse, veined with red and black; found upon a Moor near *Whitehaven*, in *Cumberland*.

a. 85. A harsh *Earth*, composed of Plates, alternately white and yellow; out of a Pit in which the *Yellow-Ochre*, a. 75. is got, on *Shot-over-Hill* near *Oxford*. This is the *Ochre* mention'd by *Dr. Plot*; but with the yellow has some white intermix'd.

a. 86. A harsh *Earth*, variegated with yellow and purple; found on the side of a Ditch near the Hill where *Oyster-Shells* are dug out, near *Hedley* in *Surrey*.

a. 90. *Earth*, very fine, and of a bright red, preferable to that brought from the *East-Indies* for the use of Painters; found in a Fissure, among *Iron-Ore*, in the *Skrees*, a Mountain in *Cumberland*. 'Tis a *Red-Ochre*. *Conf. a. 65. supra.*

a. 91. *Red-Ochre*, from . . . . . in *Staffordshire*.

a. 92. *Red-Ochre*, more stoney and hard; from . . . . . *Cumberland*, Lord Bishop of *Carlisle*.

a. 100. *Loam*, very fine and soft, with very small Spangles of *Mica* in it; used for Moulds by the Bell-Founders. *Thrup*, *Northamptonshire*. Mr. *Morton*.

a. 101. *Loam*, more harsh, used for making the Bricks employ'd in building the Wind-Furnaces for melting Iron with Sea-Coal. 'Tis got at *Hedgerley*, about five Miles from *Windsor*.

a. 102. *Loam*, of a dusky green Colour, appearing to be composed of *Clay* and fine *Sand*, and the Tincture to be owing to an Admixture of a *Vitriolum Martis*: From *Hamstead-Heath*, near the Mineral-Spring; where 'tis found in considerable plenty.

a. 103. A reddish brown *Clay*, just as digg'd up out of the *Earth*. 'Tis used to make Bricks, and is of the best sort of *Brick-Clay*, dug up in the Fields on the East-side of *Hyde-Park*.

a. 104. *Clay*, little different from the foregoing, used for making of Tyles; from *Kilburn*, near *Marybon*, *Middlesex*. There are found among this *Clay* some *Selenita*: and there are many small ones in one Part of this very Mass; indeed there appear Sparks of that Body in all Parts of it. This had been flung up some Months, and expos'd to the Air: and there are green (*Conf. a. 102. supra.*) Efflorescencies in several Parts of it, which seem to be of *Vitriol*; that Mineral, and the *Pyrites*, being very frequent in almost all Parts about this City for many Miles round.

There

There is very little *Earth* that does not contain some Salts in it. 'Tis very providential indeed, that those Salts are so dispers'd in it; they serving to mellow the Earth, as the Husbandmen speak, to open, loosen, and disentangle the Matter that serves for the Increment and Formation of Vegetables. The Design of the Workmen, in exposing the *Clay* to the Rain and Weather, is to drain it from those Salts, that the Bricks and Tiles may be the more firm and durable. If the Salts be not drawn forth before the *Clay* is baked, they do not only hinder its setting well in the Kiln, but are apt to liquate afterwards, and so make the Bricks and Tiles moulder and decay. I think there is an Act of Parliament ascertaining how long time the *Clay* is to lie expos'd before it be work'd up. The Pot and Tobacco-Pipe-Makers steep their *Clay* in Water for some time; and by drawing off the Water, drain forth the Salts before they use and make up the *Clay*.

a. 105. *Clay*, of a light brown Colour, used for the making Tiles, got in the Fields near *Pancrass*. There are in it Veins of a blueish marley Matter; and, in some parts, very small *Selenita*. The *Clays* used for the making Bricks and Tiles, all burn red, and doubtless hold some share of Iron.

a. 110. *Common Vegetable Mould*, of a blackish Colour, taken up just under the Turf near *Peckham* in *Surrey*. See *The Nat. Hist. of the Earth*, 2d Edit. p. 12.

## APPENDIX I. to CLASS I.

### S A N D S.

#### EXTRACT.

**S** Pangles, of a white silvery Talc, in Sand, † a. 7.

Spar, from a Vein, in form of Sand, † a. 2.

Sand, cohering pretty firmly, and having the Consistence of a soft Stone, † a. 4.

Sand, moulder'd, and beat off the Rocks by Weather, † a. 9.

Sand, used for the making of Glafs, † a. 1.

Sand, dispos'd into its present State by the flowing of the Water, departing at the Deluge. Vide Preface to App. II. to Class I.



## APPENDIX I. to CLASS I.

## S A N D S.

+ a. 1. **W**HITE Sand, used for the making Glafs. From the *Isle of Wight*.

+ a. 2. Loose Matter in form of Sand, very white and sparkling. It exactly resembles a fine white Spar, when broken; and indeed 'tis only Spar found in this manner. From a Vein of Lead-Ore, in Barrow-Work, Cumberland. There is found in the same Vein, as also in the Lead-Mines of Arkendale, of this very Matter, much grosser, to the bigness of Pease. Where there is found any of this Matter, the Masses of Spar in the Vein are usually very shattery and friable: so that this is doubtless nothing but Spar, either formed thus, or shatter'd and fallen to pieces.

+ a. 3. Sand, pretty gross, of a pale brown Colour, with a Cast of yellow; from a Gravel-Pit, near the Road a little on this side Newington, Middlesex.

+ a. 4. Sand, very fine, of a grey Colour, with a Cast of green; out of a vast Stratum, lying underneath the Loam in the great Pit at the further end of Woolwich, Kent. This Stratum is bared down for near 20 Foot. It may be much thicker, they having not digged to the bottom of it. The Stratum of Sand at the hither end of Woolwich, and that at the farther end of Deptford, is wrought as deep into, tho' they have not sunk to the bottom of either. The Sand, in some parts of all these Pits, hangs pretty firmly together, and is in form of a soft friable Stone.

+ a. 5. Fine Sand, of a very light brown Colour; from the great Sand-Pit, at the hither end of Woolwich, Kent.

+ a. 6. Sand, pretty fine, brown, with a Cast of red; from a Sand-Pit on the South-East side of Croydon, Surrey. There was also, in the same Pit, Sand exactly of like Colour and Constitution with that + a. 4. Both sorts are got here in great plenty.

+ a. 7. Sand, fine, of a yellow Colour, with Spangles of a white shining Talc amongst it. Out of a Gravel-Pit on Hamstead-Heath, where 'tis found in considerable plenty.

+ a. 8. Sand, part pellucid, part yellow, and part black. From a Gravel-Pit on the South side of Marybone.

† a. 9. *Sand*, of a pale Colour, very near white. From *Mount-Hermon*, near *Tunbridge-Wells*. 'Tis found in considerable plenty on the sides, and at the bottoms of the naked Rocks there; from which indeed 'tis moulder'd, and successively driven down by the Action of the Rain and Weather upon those Rocks, which consist entirely of this sort of *Sand*, and are externally tender and friable, tho' they be more firm and solid deeper and within. *Conf. b. 34. infra, Cl. II. p. 1.*

† a. 10. *Sand*, white, shining, and very small; from *Congham* by *Lynn*, in *Norfolk*. 'Tis found there in great quantity.

## APPENDIX II. to CLASS I.

### G R A V E L.

### P R E F A C E.

**T**HE Gravel about London, and in most parts of England, is no other than Pebles, or Flints, or both, with an Intermixture of Sand, chiefly of that sort that is compos'd of extreme little and small Pebles.

The People of those Countrys that afford no Gravel, are very sensible of the Inconveniencies that attend the want of it. England abounds, in several Parts, with such as is very fine and good: and may be brought to be very smooth, binds well, and is capable of a very firm Consistence, so as to serve for the covering and making Alleys, and Walks.

That sort of Sand, that is in common Use about this Town, brought from Black-Heath, and other Parts of this Neighbourhood, viewed with a Microscope, appears to be nothing but very small Pebles. It is found likewise in several other remote parts of the Kingdom. Whoever shall attentively consider the Manner in which this lies in the Earth, will see that it is not in regular orderly Strata, of equal thickness in all parts, as Stone-lies, and various sorts of Earth which are in their original State, and just as they subsided from the Waters, stagnating at the Deluge. No, this lies in Trains, and manifestly pitched in Streaks, and just as it would be cast by Water, flowing, in its departure towards the Ocean, and the Inlets of the Abyss, which are at the bottom of it. Gravel is shot and pitched into the same Method: and doubtless owes its disposition to the same

*Cause.* What adds much Confirmation to this is, that both are found, commonly out of their proper Region, cast on lighter Matter that is dispos'd into Strata, and is in its original State. Thus we see even in this Neighbourhood near Deptford, on other Parts of Black-Heath, and in many more Places, a great Quantity of Sand, and Gravel, lying above Chalk: and when we come to dig thorough perhaps twenty or thirty Foot of Gravel down to it, we find the Chalk lying, in regular Horizontal Strata, underneath, down frequently to a very great depth. In my answer to Dr. Camerarius, (pag. 64, & seqq.) I have shewn what a vast and immense Quantity of Water there lay on the Surface of the Globe during the Deluge. And this was not only of mighty Bulk and Weight, but seems to have passed off in Hurry and Precipitation. There are in many Parts of the Earth Marks of the greatness of its force, and the Havock it made at its departure. In some Countries we find Fragments of Stone, of many Ton in Weight, where none of like sort is found, there, in the Earth, they having been torn off, and brought from afar. Lesser Bodies so imported, are found in many Countries without Number. By such Quantities of Matter, solid Stone, and the like, and loose Sand and Earths, being taken from one part of the Globe, and conveyed to others, great Alterations were made in the Surface. As to Sand and to Gravel, 'tis very probable the Pebles and Flints that constitute them were deposited at first, dispersedly, in the Strata of Earth, Clay, Marl, Loam, or the like, as we at this day find them in such Strata as are yet entire. But when those Strata were torn up, and born off by the Water, the Earthy Matter, that was softer and lighter, would be easily washed away, and separated from the Pebles and Flints, that were harder and heavier. So that 'tis not strange that this sort of Sand, Pebles, and Flints, are found at this day collected together, and extricated from other Terrestrial Matter. We see Instances of the like on the Sea-shores: Nor was this Hurry of the departing Waters without a Providential Conduct. These, and other Bodies, of greater use to Mankind, were selected, and brought together by it: The Bowels of the Earth were laid open to human View, and the Riches there brought nearer to the Hand of Man. The Loads or Veins of Metal were by this Action of the departing Water made easy to be found out by the Shoads, or Trains of Metallic Fragments, born off from them, and lying in Trains, from those Veins, towards the Sea, in the same Course, that Water falling thence would take.

There are Pebles and Flints now frequently found, among the rest in Gravel, that have their Surfaces rubb'd and smoothed, nay some much ground, and worn. All which was done by the hurry and force of the Water, in their removal from Place to Place. There are some Instances of this in Class III. particularly. c. 227.

## E X T R A C T.

Gravel and the common Sand, clear'd, collected, and put into its present Posture and State by the Water, of the Deluge, departing, p.

Gravel consists of Sand, and Pebles or Flints. Of the goodness of the Gravel of *England*. The Usefulness of it.

## G R A V E L.

x a. 1. Gravel from a Gravel-Pit on *Hamstead-Heath, Middlesex*.

## C L A S S II.

*Fossils that are solid, and form'd into Strata.*

## E X T R A C T.

## PART I. Stone and Stony Substances.

SECT. I. *The several sorts of Stone that break with equal indifference in any Direction.*

*Free-stone*, b. 1. to b. 14. *Cos aquaticus*, a sort of *Grind-stone*, b. 30.  
*Grind-stone*, b. 30, 31. *Whet-stone*, b. 32.  
*Sand-Stone*, b. 34.

C. 1. *Extraneous Matter found lodged in Stone.*

*Mica* in Stone, b. 1. 31, 32.  
*Selenita* in Stone, b. 13.  
*Spar* and *Crytal* in Stone, V. x d. 40. Cl. 4.  
A pitchy, or bituminous Matter in Stone, g. 1.  
*Nitre* in Stone, g. x 30, 31.  
*Minerals* of all sorts in Stone, Clafs 8, 10, 11.  
*Metals* of all sorts in Stone, Clafs 12, &c. seq.

C. 2. *The Mechanical Uses of the several sorts of Stone in this Section.*

A Stone, that endures the Fire, used for Hearths, &c. b. 1.  
 — used for the Insides of Cupoloes, employ'd in melting  
*Copper*, b. 31.  
*Free-stone* used for Hewn-Work in the best Buildings, b. 12, 13, 14.  
*Stone* used for Floors, Pavements, &c. b. 20, 21, 22.  
*Stone* used for whetting chiefly Scithes, b. 32, 33.  
 — for Grinding, b. 30, 31.

SECT.



SECT. II. *The several sorts of Stone that break or rise streight in only one Direction; splitting with a Grain, lengthways, or parallel to the Site of the Strata.* V.Cl. 2.

Whetstone, *b.* 60.

Blue Slate, *b.* 80.

Limestone.

White Slate, or Flag, *b.* 85.

Ragstone, *b.* 70.

C. 1. *Extraneous Matter found in the Stone exhibited in this second Section.*

Mica in Stone, *b.* 60.

— in white Slate, or Flag, *b.* 85.

Talc in Rag-stone, *b.* 70.

— in blue Slate, *b.* 80.

Salts in Shiver, *b.* 90.

C. 2. *The Mechanical Uses of the several sorts of Stone in this second Section.*

Stone used for whetting Tools, *b.* 60.

A smooth Stone used for setting a fine Edge, *b.* 70.

Slate used for covering Houses, grey, *b.* 80.

— White, *b.* 85.

A white Stone used for the flagging of Floors, for Cisterns; and Tanners Fatts, *b.* 85.

Shiver used in Agriculture. The Salts in it, when liquated by Rain, serve to mellow, open, and relax the Earth, *b.* 90. *Conf.* Cl. 1.

*a.* 104.

Limestone. Of the great Use of Lime in Agriculture, Building, dressing of Leather, making of Soap, Fusion of Metals, &c. Also of its Uses in Physick, Surgery, and Farriery.

SECT. III. *The several sorts of Stone that will not break streight, or in any certain Direction; but, by reason of certain Flaws, and Chaps, shatter, and break irregularly, and cross-grain'd; so as to be of little Mechanic Use.* *Conf.* Cl. 2.

APPENDIX. *The Error of those who suppose that Stone now grows.* *f.* x53.

PART II. Alabaster, † *b.* 1. *Conf.* Cl. 2.

PART III. Marble.

Marble is found both in Strata, and in perpendicular Fissures, Cl. 2. *Pref.*

That found in those Fissures has no Sea-shells in it, *ibid.*

Masses

Masses of fine Marble found on the Sea-shores; being Fragments, of Strata, that are worn round by the Agitation of the Sea, *ibid.* or of the Water, departing, at the end of the Deluge. *Conf. Ap. to C. 2.*

Of the *Marmor fusile*, and the slender round *Scapi* of Pillars, in several Churches of England, supposed to be made of it: *x b. 60. Conf. Cl. 4.*

#### SECT. I. Veined Marble, Cl. 2.

#### SECT. II. Spotted Marble, Cl. 2.

Porphyry, *Θ d. 36, 39.*

Granite, *Θ d. 32, 38. 38\*. 38†.*

Ophites, *x b. 25.*

A greenish Marble, with *Linum*

*Asbestinum* in the Seams of it,

*† d. 8, & seq. x b. 28.*

#### SECT. III. Marble both vein'd and spotted.

SECT. IV. Marble variegated and distinguished by Sea-shells, Corals, and other extraneous Bodies, contain'd in the Mass of it. *Conf. Sect. 4. x b. 60.*

Some of the River and Sea-shells were filled with Spar before they were lodg'd in this Marble. *x b. 60.*

SECT. V. Flinty-Marble, or that nearly approaches Bodies of the Flint or Agate-Kind, in Hardness, Politure, and Completion.

Flinty Matter found both in Nodules and in Strata. *Conf. Pref. to this Sect.*

Chert or Whern, *x b. 85.*

## CLASS II. (b).

FOSSILS that are solid, and formed into Strata.

### PART I. Stone and Stony Substances.

SECT. I. The several sorts of Stone that break with equal indifference in any Direction.

*b. 1.* Stone, soft, and of a pretty small Gritt; of a pale Grey Colour near white; with numerous small Micæ of a white Silvery Talc. It endures the Fire well: and is therefore sometimes used for Bottoms of Ovens, but chiefly for Hearths, and Coveings of Chimneys. Got in considerable plenty near Rygate, Surrey.

*b. 12. Stone*, out of the great Quarry of *Portland*, of a pale or whitish Colour, composed of numerous small roundish Grains, not unlike the smaller Ova of Fishes. They split in the cutting of the Stone; so that it is capable of being brought to a Surface very smooth and equal. Besides, this, and all like sorts of Stone that are composed of Granules, will cut and rive in any Direction: as well in a Perpendicular, or in a Diagonal, as Horizontally and Parallel to the Site of the Strata. 'Tis for this reason that they have obtain'd the Name of *Free-stone*. Then these bear the Injuries of the Weather equally and indifferently in all Positions. Whereas all the Stone that is Slaty, with a Texture long, and parallel to the Site of the Stratum, will split only lengthways or horizontally: and, if placed in any other Position, 'tis apt to give way, start, and burst, when any considerable Weight is laid upon it. Which Inconveniences the *Portland-Stone*, being not liable to, cutting freely, and being of a Colour very good and agreeable; 'tis made use of for the better Buildings and Works about *London*.

*b. 13.* Another Mass of Stone, of like Texture, and from the same Quarry; but not quite so white. There are in this Mass several small Selenitæ: and, in some Masses of this Stone, I have seen much larger.

*b. 14. Stone*, of a pale brown Colour, very thick set with Pelli-  
cles of the Ova of Fishes, and small testaceous Bodies, from *Ketton*, *Northamptonshire*. This also is *Free-stone*, and made use of for Building, particularly of several of the Colleges in *Cambridge*.

*b. 20. Stone*, of a light grey Colour, and of a pretty fine Grain; used for Paving. From *Purbeck*.

*b. 21. Stone*, of a light brown Colour, used likewise for Paving. From *Purbeck* also.

*b. 22. Stone* of a dusky brown Colour; thick set with Sea-shells. Used also for Paving. From the same Place.

*b. 30. Stone*, Brown, and of a pretty harsh Grit; used for Grind-Stones. *Cos aquaticus*. From *Newcastle*.

*b. 31. Stone*, of like Grit; having several Micæ of white Talc in it. 'Tis of a grey Colour, with a Cast of Red. From *Whitehaven*, *Cumberland*. 'Tis made use of there for Building: as also for Grind-Stones. It abides Fire very well: and therefore is likewise employed for the Building of the insides of the Cupuloes for running of Copper there.

*b. 32. Stone*, of much the same Constitution and Complexion, with that *b. 1*; only it has a slight Cast of Brown. There are likewise in it numerous Micæ of a white Silvery Talc, and some very small ones of black Talc. This is used for whetting Scithes. 'Tis of the finer sort, and therefore is called *fine Scithe-Stone*, or *Rubber*. From *Heage* in *Derbyshire*.

*b. 33. Stone*, composed of white and brown Grains, with small Micæ of a Silvery Talc. This likewise is used for whetting of Scithes: and having a grosser Grit than the precedent, is call'd,

*Sand-Stone, Coarse-Scithe-Stone, or Rubber. From Spoondon, in Derbyshire.*

*b. 34. Sand-Stone, from Mount Hermon, near Tunbridge-Wells.* There are several naked Rocks of it, composed of Grains of Sand, (*Conf. & a. 9. App. to Class 1.*) partly white, and partly pellucid. The exterior Parts of the Rock, that are exposed to the Weather, have frequently in them Spots and Veins of Black and Brown, as in this Sample, and sometimes of Red; those Colours seeming to have been caused by extraneous Matter introduced by Rain; the interior Parts of the Rock being generally free, clean, and white.

SECT. II. *The several sorts of Stone that break streight in only one Direction; splitting with a Grain lengthways, or parallel to the Site of the Stratum.*

*b. 60. Stone, Grey, with a Cast of Brown, with numerous extremely small Grains of a black Mica, and some few, as small of a Silvery. Whet-stone got near Newcastle upon Tyne.*

*b. 70. A grey talky Stone. This is call'd Ragstone, and is used for setting an Edge to Knives, Chizels, Axes, and the like, after Grinding, or Whetting upon that sort b. 60. or other like Stone that is harsher and of coarser Constitution.*

*b. 80. Slate, Grey, with a Cast of Green: of a glossy, talky Constitution: (Conf. Class 4.) splitting even, freely, and into very thin Plates. From a Slate-Quarry in Newlands, Cumberland, about a Mile from the Black-Lead Mines.*

*b. 85. This is call'd in the North, White-Slate, or Flag. 'Tis thick set with Spangles of white Talc; from a Quarry by the Road betwixt Carlisle and Newcastle. This sort of Stone is frequent in those Parts, and in the North of Yorkshire. 'Tis of a pale Brown; but there is of it of a Grey, or Ash-Colour. This is just half an Inch in Thickness; having the two Surfaces exactly smooth, even, and parallel to each other. This sort is every where thus flat, rising in this Form, and in Layers of about this Thickness, for perhaps ten or twelve Foot in perpendicular. But generally the uppermost Strata are the thinnest; those that lie deeper gradually encreasing in Thickness, till at last they are so thick as not to serve for Slates. The thicker Flags they use for Cisterns, and Tanners Fats, as also for Pavements and Floors: as they do the thinner for covering of Houses. For this last Purpose they use Plates of this from one to four foot Square. For, in the Earth, each Flag, or Stratum, keeps the same Thickness in all Parts, how far soever it be pursued horizontally; till the Quarry terminates. They lie level generally, or a little inclining.*

*b. 90. Shiver, of a dark Ash-Colour, near Black. From a Lead Mine at ——— not far from Newcastle. It lies in Strata. Some of it is pretty hard; and to that they give the Name of Plate. But the softer sort, in raising, falls into Shivers like this in this Sample; which is the Reason of the Name. This Body much re-*



seembles the Alum-Rock, both in Constitution and Colour: and indeed most of it holds of that Mineral, more or less; for which Reason, being wet, by Rain, or otherwise, the Salts liquating, it becomes soft like Marle; and, as such, succeeds well in Agriculture.

SECT. III. *The several sorts of Stone that will not break straight, or in any one certain Direction: but, by reason of certain Flaws, and Chaps, shatter, and break irregularly, and cross-grain'd; so as to be of little Mechanick Use.*

## PART II. Alabaster.

† b. 1. *Alabaster, from Marged-Overton, Rutlandshire.*

## CLASS II.

### PART III. *Marble.*

#### PREFACE.

**T**H<sup>O</sup> Marble be frequently found lying in Strata, as is intimated in the Title at the Head of this Class, yet 'tis sometimes likewise found in the perpendicular Fissures. That also is the case of Alabaster. Of this there are Instances amongst the Vein-Stones: in particular, that † f. 9. (App. to Cl. 6.) That which is found in those Fissures, can never have Shells or other extraneous Bodies in it, as that which is in Strata usually hath.

There are some Marbles also in the List of the Micæ: and in particular the Granite, © d. 32. 38. \* 38. as also Porphyry, © d. 36. 39. Then, in the Appendix to this Class, there are Fragments of very various sorts of Marble found upon the Shores of England: and several of them so beautiful, and fine, as to equal, if not surpass the noblest Marble I have yet seen from Italy, so as well to deserve to have further search made after them in the neighbouring Cliffs, from which, perhaps, (Conf. App. to this Class.) those Fragments were forced by the Insults of the Sea. And indeed several of the Masses in the Class of Coralloid Bodies appear to be Fragments of Marble, of that sort set forth in the fourth Section of this Class, broke off the adjacent Cliffs, worn, and rounded by the Agitation of the Sea in Storms and Tides. In particular, that c 22, and several of those that follow: as also c 35. and some others, found on the Coasts of Lincolnshire and Yorkshire.

In the same Appendix, and in Class III. are likewise Instances of Marble, worn, and rounded, found at Land, and at distance from the Sea, that were torn from their original Strata, and so rounded

by the Water of the Deluge retreating towards the Sea, and the Apertures at the bottom of the Sea, to which the Water tended, in order to its return thorough them back to the Abyfs.

### SECT. I. Vein'd Marble.

x b. 1. Marble, the Ground of a pale brown Colour, with Veins of white Spar, and some Lines of a purple Colour. From . . . . . in *Somerſetſhire*.

x b. 2. Marble, of a yellowiſh brown Colour, with Veins of a bright Red and of White. From . . . in *Wales*. *Sir Chr. Wren*.

x b. 3. Marble, of a duſky green Colour, vein'd with White. Found in the way betwixt *Ambleſide* and *Penrith*, in *Cumberland*; where there is a conſiderable Quantity of this ſort.

x b. 4. Marble, vein'd with White and Red. *Plymouth*. This is ſomewhat harder than the white *Genoeſe Marble*.

### SECT. II. Spotted Marble.

x b. 25. Marble, the Ground of a duſky brown Colour, with oblong Spots of a bright Green. This is a Species of the *Ophites*, and was dug up in the Marle-Pit at *Hunton*, near the River *Medway* in *Kent*, mention'd by *Dr. Hatley*, *Philof. Tranſactions*, N<sup>o</sup> 155. p. 463. The Doctor ſent me this, averring 'twas affuredly dug up there, tho' he never ſaw any more of it.

x b. 27. Marble, the Ground grey, spotted with a pale green. Found on the Sea-shores at the *Oſtium* of the River *Palmer*, *Cornwall*.

x b. 28. Marble, the Ground duſky, near black, with a Caſt of Green, having in it Spots of a pale Green. In the Chaps, Seams, and Fiſſures of this, is found the *Linum Aſbeſtinum*. From the *Iſle of Angleſey*.

### SECT. III. Marble variegated and diſtinguiſh'd by Sea-Shells, Corals, and other extraneous Bodies contain'd in the Maſs of it.

x b. 60. Marble, from *Petworth*, *Suffex*. The Ground grey, with a Caſt of green. 'Tis very thick ſet in all Parts of it with Shells, chiefly turbinated. Some of them ſeem to be of that ſort of River-Shell that *Dr. Liſter*, *Hiſt. Cochlear. Angl.* p. 133. calls *Cochlea maxima, fuſca ſive nigricans, faſciata*. Several of the Shells are filled with a white Spar, which variegates and adds to the Beauty of the Stone. That Spar was caſt in the Shell before this was reſolited in the Maſs of Marble, as is demonſtrable from view of this and other like Maſſes. *Conf. Nat. Hiſt. of the Earth, Part IV. Conſect. 2. p. 181. & ſeqq. ſecond Edit.* This is of about the Hardneſs of the white *Genoeſe Marble*.

The ſlender round Scapi of the Pillars of the *Abbey-Church* in *Weſminſter*, and of the *Temple-Church*, are of this ſort of Marble.

So



So likewise are those of the Cathedral Church of *Salisbury*, as I remember ; and my Lord *Pembroke* assures me positively they are. Some Persons, that are less skillful in these Matters, fancy these Scapi, that occur in most of the larger *Gothick* Buildings of *England*, are artificial : and will have it, that they are a kind of fusil *Marble*, cast in cylindrick Moulds. Any one, who shall confer the Grain of the *Marble* of those Pillars, the Spar, and the Shells in it, with those of this *Marble* got in *Sussex*, will soon discern how little ground there is for that Opinion. And yet it has prevail'd very generally. I met with several Instances of it as I travel'd thro' *England*: and had frequent Opportunities of shewing those, who asserted these Pillars to be factitious, Stone of the very same sort with that they were composed of in the neighbouring Quarries. *Camden*\* had entertain'd the same Notion of those vast Stones of *Stone-Heng* ; but is fully refuted by *Inigo Jones*†.

x b. 61. *Marble*, of an Ash-Colour, very hard, and taking a fine Polish. It is thick set, in all Parts, with *Entrochi* of different Sorts and Magnitudes, and lying in variety of Postures. They appear whiter than the rest of the Stone, by which means they make a pretty Variegation of it, and take as good a Polish. From the Peak in *Derbyshire*. Sir *C. Wren*. This is as hard as the *Plymouth Marble*.

x b. 62. Black *Marble*, in which are several Pieces of a white Coralloid Porus lodg'd in different Positions, so that the Sides of some, and the Ends of others appear. They are of several Sizes ; the largest near an Inch in Diameter, the least not above one tenth of an Inch. The longitudinal Plates of these Bodies are join'd by several thin cross Coralloid Septa, passing from one to another, and exhibiting a very elegant Texture. The Interstices are generally fill'd up with a greyish semi-pellucid Matter, appearing to be Spar. Both the *Coral* and *Marble* take a very fine Polish: and the one being white, and the other black, make together a beautiful Composition. From . . . . . in *Wales*. The Tomb of Sir *Thomas Gresham*, the noble Founder of this College, is built of this *Marble*. It is in *Great St. Helen's Church*.

SECT. V. Marmor Silici vel Achatii accedens. *Flinty Marble, or that nearly approaches Bodies of the Flint or Agat-kind, in Hardness, Politure, and Complexion.*

#### P R E F A C E.

**T**H<sup>O'</sup> *Flinty Matter* be most commonly found formed into Nodules †, yet it is also sometimes found formed into Strata, of which there is an Instance in x b. 85. infra. I am not sure whether the

\* In his *Britannia*, p. 95.

† *Stone-Heng* restored, p. 33.

† Conf. p. 33. infra.

Roman Word *Silex* answers exactly to our Flint. This is certain, that would strike fire x, was very hard †, and broke sharp and in Angles\* like our Flint. 'Twas also in Nodules ‡, and used both in Italy and Greece, mix'd with other Stone in the Walls of Buildings ©, in like manner as heretofore in Kent, Surry, and other Parts of England. But the Romans also apply'd the Word *Silex* to denote Stone very hard, black, white, and red form'd into *Strata* ++.

x b. 85. A Mass of a greyish horny Constitution, with Streaks of Red in it. 'Tis very hard †, and semidiaphanous; very like the common *Agat*, and gives fire as readily. From the Moulds in *Arkendale, Yorkshire*. The *Stratum*, off which this was broke, was about 3 Foot thick. I traced it for 20 or 30 Yards in length: and found a like *Stratum*, probably the same, at about a Mile's distance. I have observed *Strata* of this sort in several Parts in the North of *Yorkshire*, interposed amidst *Strata* of a grey Lime-Stone. There is another sort of it of a dusky Hue, and much like the common black *Flint*. This the Miners there call *Chert*, and *Whern*: The Stone-Cutters of *London, Nicomiaz*. 'Tis so hard, that the Picks and Tools will not touch it. It will not split; but breaks irregularly, with a Grain cross, like that of the common *Flints*. There are also in some of this natural Cracks, as there are in those.

## APPENDIX to CLASS II.

**M**asses of *Marble*, and the finer sorts of *Stone*, that were originally beat off from the *Strata* of the neighbouring Rocks and Cliffs down upon the Shores, and there rolled and moved to and again till they were rounded, smoothed, and reduced to the Form of Pebbles, by the Water of the Sea, or Rivers, when put into Agitation by Tides and Storms; or, by the Waters departing at the end of the Deluge. Also of Stones perforated by *Pholades*, and other Creatures. Concerning these Bodies, see p. 25. *infra*.

x *Silicis Scintillam excudit*—*Æneid*. I. 178.

† *Dura Silex*—ib. vi. 471.

\* *Acuta Silex*. ib. viii. 233.

‡ *Lapis Globosus*. Plin. xxxvi. 22.

© Plin. *ibid*.

++ Plin. *ibid*. & xxxiii. 4. Virg. *Eclog*. I. 15. *Æneid*. vi. 602, & viii. 233.

† Mr. Hardy, who has work'd in it, assures me 'tis near as hard as *Agat*,

## E X T R A C T.

Porphyry, \* b. 2.

Micæ in Marble, \* b. 11. 19.

Marble vein'd with white Spar, \* b. 11.

Parts of the same Mass of Marble of different Hardness, \* b. 15.

Marble scoop'd and perforated by Pholades, \* b. 19. & seqq.

Marble that takes a Polish not inferior to that of Agat, \* b. 9.

## P R E F A C E.

**T**HO' it be true that many of these Bodies have been beat out of the Cliffs by the Insults of the Sea: and some of them from off the Rocks there, and afterwards smoothed and rounded by the Waves and Action of the Sea on the Shores; yet, because we find several of Constitution very different from the Stone of the neighbouring Rocks, 'tis most probable that these latter, at least, were Remains of Fragments, broke off from harden'd Strata, borne thence, worn and rounded by the Force of the Water departing at the latter end of the Deluge; and finally, many of them left, with other Bodies, when the Force of the Water abated. Such indeed are frequently found in the midland Parts, (Conf. Class 4. Part 1. Pref. infra.) of most Countries, as well as nearer to the Seas, and even to the very Shores, whence they are wash'd forth by the Agitation of the Sea. See the Nat. Hist. of the Earth, Part IV. near the end, treating of the Sea beating Amber out off the Cliffs.

*Marble and Stone worn and rounded by the Motion of Water.*

\* b. 1. A Mass, brown, with a Blush of Red; thick set with Spots of White. Found on the Shores at *Loo-Beach, Cornwall*.

\* b. 2. Another, little different, only the Ground is of a more dusky Brown. Found amongst several others on the Shores at the *Land's-End, Cornwall*. There are vast Strata of Stone of like sort in the Country thereabouts, and particularly in the adjacent Cliffs, from which these Masses were first broke and forced, and afterwards smooth'd and rounded by the Working and Agitation of the Sea. This is much like the true Porphyry, both in Colour, Spots, and Constitution.

\* b. 3. Another, the Ground light Red, with numerous Spots of a dark Blue, and some few of White. From the same Shore.

\* b. 4. Another, variegated with Red and White; found along with \* b. 1. at *Loo-Beach, Cornwall*.

\* b. 5. Another, the Ground Red; with Spots, some White, others Pellucid. Found in the River *Palmer*, not far from its Discharge into the Sea. *Cornwall*.

\* b. 6. Another, variegated with Red, White, Brown, and Yellow. From the same Place.

\* *b. 7.* Two others, variegated with Brown, Red, and White; from the Shores at the *Lands-End, Cornwall*.

\* *b. 8.* Another, the Ground a deep Red; spotted and lineated with a bright Red, and White. Found upon the Shores near *Overthorn, in Holderness, Yorkshire*.

\* *b. 9.* Another, of the same sort, from the same Shore. This is cut, and polish'd. 'Tis a very beautiful Stone, taking a Polish almost equal to an Agat; and superior to any *Marble* I ever saw.

\* *b. 10.* Another, the Ground a dark Ash-Colour, spotted very thick with White. Found in the River *Palmer, Cornwall*, along with \* *b. 5.* and \* *b. 6.*

\* *b. 11.* Another, the Ground Brown, with a Cast of Red, thick set with *Mica* of a white silvery Talc; and vein'd with white Spar. From *Loo-Beach, Cornwall*.

\* *b. 12.* Another, the Ground Ash-Colour; with Veins of a fine White intersecting each other in a very remarkable manner. From the same Place.

\* *b. 13.* Another, the Ground Brown, with Spots of a dusky Yellow; vein'd with White. From the Shore near *Overthorn, Yorkshire*.

\* *b. 14.* Another, the Ground an Iron-Grey; vein'd with Red and Incarnate. Found, amongst many other like Bodies, on the same Shore of *Overthorn*. There is got near *Plymouth* a *Marble* of like Constitution with this: and with the Ground and the Veins of like Colour.

\* *b. 15.* Another, the Ground a dark Ash-Colour; vein'd with White. From the same Shores. The Parts of this Stone that are white, stand forth somewhat above the ordinary Surface of the Stone, as being harder than the rest, and so having better maintain'd themselves against the Attrition these Bodies undergo by the Motion of the Sea on the Shores.

\* *b. 16.* Another, the Ground a yellowish Brown; vein'd with White. From the Shores of *Lincolnshire*, betwixt *Skegness* and *Ingoldmells*.

\* *b. 17.* Another, the Ground Grey: thick set with Veins of White, intersecting one another in a very remarkable manner. From *Loo-Beach, Cornwall*.

\* *b. 18.* Another. This is of a Grain not so fine as the rest: but is variegated and veined with Red, and a very pale Grey, in a very beautiful manner. Found on the Shore, under *Pendennis-Castle, Cornwall*. There is among the rest, a *Siratum* of Stone of this sort in the neighbouring Cliffs; whence this doubtless was beaten.

\* *b. 19.* Another, of an Ash-Colour; thick set with *Mica* of a white silvery Talc. It is scoop'd and perforated by *Pholades* or some other like Fish. Found, among a vast many others, on the Shores betwixt *Workington* and *Whitehaven, Cumberland*.

\* *b. 20.* A dark-grey Mass, found on the Shores of *Lincolnshire*, betwixt *Skegness* and *Ingoldmells*. 'Tis of an oval Form, about two Inches long, and one and a quarter over. 'Tis perforated in all parts



parts of it, and thorough the whole Body of the *Stone*, the Perforations running into, and communicating with one another. They are so very numerous, and thick set, that they take up as much space as the Substance of the *Stone* that parts them does. The largest of them are capable of receiving a Vetch; but there are others less, in all degrees. There's one part of it somewhat more free from these Perforations than the rest of the Body. The Planks of Ships are frequently perforated in this manner: only those Perforations are commonly larger. And the Shells of Oysters \*, and other like crass Shells, are frequently found eroded and pierced in all Dimensions, and sometimes full as much as this *Stone*, by a sort of Worm. I do not undertake to determine whether this, and other like perforated stoney Masses, be so wrought by Insects: but 'tis certain the *Pholades* work themselves into, and perforate *Stones* as hard as these. About *Weymouth* there are grey and white *Stones* much bored and scoop'd by *Pholades*. Mr. Robert Ball tells me he saw *Marble*, cut into form of Pillars, taken up at Sea, off *Leghorn*, that was so much scoop'd and hollow'd by *Pholades*, that 'twas spoil'd, and render'd of no Use. 'Twas of the common white *Carara Marble*: and had been cast away, and lain in the Sea, about sixty Years. He also assures me the red Coral, dragg'd up on the Coasts of *Italy* and *Spain*, is often found perforated and eroded by Worms under Water. The true *Purpura*, of which we have not in *England*, bores Holes in Shells to get at the Fish. Vide *Cat. of the Exotic Fossils*, part 2. §. 121. 'Tis worth Inquiry whether the saline Steams of the Sea have not some such Effect upon the *Stones* on the Shores. The Author of the Observations, *Philos. Transact.* N. 27. p. 495. acquaints us, that "on the Point *Cagna*, the Iron Guns at the Fort were so corroded, that some of them were become near useless, being perforated almost like Honey-Combs." This he ascribes to the Salt Steams arising from the Sea.

\* b. 21. Another of a whitish Colour. 'Tis perforated in like manner as the precedent: only the Surface of a considerable part of it is not near so much perforated as the rest of the Body. Found on the same Shores. Mr. Morton.

\* b. 22. Another of a pale brown Colour. On only one side this is perforated or set with Pores, generally oblong, smaller, and fewer in number, than in either of the former. The Surface of this is pretty smooth. Each Pore is environ'd with a small white

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\* See Mr. Azout's *Observations on the Worms in Oyster-Shells*, *Philos. Transf.* N. 12. p. 204.

In Vermibus qui in præduris Scopulis gignuntur, quique suas sic complent Cellulas, ut ipsæ cum Animalculis amplientur: aliæ aliis sunt majores, & nulla est Cellula quam non repleat Vermiculus, qui eam incolit: adeo ut interiores ejus Cellulæ Parietes exedere, & ejus velut Rafuris ali videatur. *Du Hamel Phys. vet. & nov. Pars* 3. *Dis.* 2. C. 5.



Circle, and that with a brown, darker than the common Colour of the Stone. Mr. Morton. From the same Shores.

\* b. 23. Another, of a darker brown, perforated in all parts of it. Found on the Shores near *Sunderland* in the Bishoprick of *Durham*.

\* b. 24. A Mass of a brown Colour, variegated with several Lines one within another, alternately of a lighter and darker brown, so as together chiefly to compose an Oval very much resembling a Knot in a Piece of Wood. In a large part of it are several streight, round, tapering Perforations of several Sizes, from  $\frac{3}{4}$  of an Inch over in the biggest part, to about  $\frac{1}{16}$  of an Inch. These are generally encompass'd with Circles of a pale brown Colour, near  $\frac{1}{16}$  of an Inch thick: Some of these Perforations are fill'd with small Crystals. Found on the *Strand* near *Harwich-Cliff*.

\* b. 25. A Mass of a pale brown Colour without; within 'tis white with a glossy Lustre, like that of some sorts of Spar. Upon breaking it, I found some small Cavities in it, from the sides of which arise several small crystalline Columns, hexangular, pointed, and very transparent. On one part of the Stone there appears a Cast of Red. Found on the Top of an Eminence, near *Dorchester, Oxfordshire*. Before I broke it 'twas smooth on the Outside, and appear'd to be worn, and rounded by the Motion of Water. There were some other like Masses, which, being broke, shew'd themselves to be only Spar out of some Vein or Fissure of a Stratum, whence they were born by the departing Water at the End of the Deluge. There was no appearance of any Fissure near.

\* b. 26. A Mass of a dusky Iron Colour, the Surface smooth'd by the Motion of the Water. From . . . . . in the *Peak, Derbyshire*. This may serve well for a Touchstone.

\* b. 27. A green Mass, surrounded, in one part with a Zone of a pale yellow. From the Shores of *Outhorn, Yorkshire*.

### C L A S S III.

*Pebles, Flints, Agats, and Stones related to them.* Vid. Pref. to Cl. 3.

#### E X T R A C T.

*A gritty Pebble, c. 226.*

*A plated Pebble, c. 209.*

*Crustaceous Pebles, c. 37, & seq.*

*Semipellucid Flints and Pebles, c.*

19. 20. 21. 22. 26. 27. 30. 31.

32.

*Pellucid Pebles, c. 12. 14. 15. 18.*

25. 34. 37.

*Crystalline Flints, c. 12. 13.*

*Flints with Undulations on their*

*Surfaces, c. 251. \* 251.*

- Ætites* or *Eagle-Stone*, c. 258, & seq.  
*Onyx*, c. 148.  
*Agats*, c. 41. 130. 144.
- Mocha-Stones*, c. 21. 22. 146.  
*Small Nodules* out of a *Stratum*  
 of *Shiver*, c. \* 11.  
*Pisolithi*, c. 11.

### C. 1. Observations and Reflections.

Of the *Silex* of the Antients, *Vid. Pref. to Sect. 5. Cl. 2.*

Of the *Silex* of the German Naturalists, *Conf. Pref. ad Lud. Helmont.*

#### C. 4.

*Pebles* and *Flints* are natural Nodules; and were all originally covered with a Film or Crust, *Vid. Pref. ad Cl. 3.*

Some of them had that Crust worn off by an Attrition, caused by the rapid Motion of the Water, retreating toward the Sea and the Abyss, at the End of the Deluge, c. 227. *Vid. App. to Cl. 2.*

Others, found upon the Shores, have had their exterior Crusts fretted off by the Agitation of the Sea, *Vid. Pref. ad Cl. 3.*

*Pebles*, *Flints*, and Bodies of the *Flint-kind*, have no Grain, as the Workmen speak. Nor will they be brought to split in any determinate Direction; but break irregularly and uncertainly, *Vid. Pref. ad Cl. 3.*

*Pebles* and *Flints* are composed chiefly of *Crystal*; and owe their various Colours to the various Admixtures of Stoney, Mineral, or Metallic Matter, that is incorporated with the Crystallin. *Vid. Pref. ad Cl. 3.*

From those various Admixtures they have obtain'd various Names, as *Agats*, *Cornelions*, *Onyx's*, &c. *Vid. Pref. ad Cl. 3.*

*Crystalline* and *Pellucid Pebles* and *Flints*.

*Crystalline Shoots* in the Cavities of *Flints* and *Pebles*, c. \* 243.

*Flint*, with Bubbles, of a semipellucid or corneous Constitution, and striated like the *Hematites*, c. 263, & seq.

*Cretaceous Matter* in the central Cavities of *Flints*, c. 258.

A *Pebble* seeming to have been compress'd or restrain'd during the time of its Coalition by some outward Force, c. 226.

Small *Pebles* immers'd in a Mass of flinty Matter, c. 4.

Several *Pebles* united in the same Mass by means of a natural ferruginous Cement, c. 1, & seq.

*Pebles* immers'd and lodg'd in Strata of Stone, c. \* 3. 13.

The *Pebles*, now inclosed in solid Strata, were all originally loose, single, and separate, c. 17.

Of the Origin and Formation of *Pebles*, c. 37. 45. 227.

Of the Cracks in *Flints*, x. d. 40.

*Flinty Matter* sometimes form'd into Strata, as well as into Nodules, *Vid. Pref. ad Sect. 5. Cl. 2.*

Masses of *Marble*, rounded, and worn into the Form of *Pebles*, by the Agitation of the Sea, to be distinguish'd from the true *Pebles*, *Vid. Ap. to Cl. 2, & seq.*

C. 2. *Of the Uses of the Bodies of this Class:*

*Agats, &c.* for Heads of Canes, Hafts of Knives, &c.

*Flints* used in Building, *Vid. Pref. ad Sect. 5. Cl. 2.*

*Pebles* and *Flints* used for Pavement.

Small *Pebles* incorporated and cemented together by a gritty Mass used for Millstones, c. 1.

## *Pebles, Flints, Agats, and Stones related to them.*

### P R E F A C E.

**C**Alculi, *Pebles*. Under this Title I intend Bodies of very various Colours: and somewhat of the Constitution of Spar, but much harder; breaking irregularly and uncertainly.

Silices, *Flints*. Bodies of various Colours, but ever with a corneous Ground: and harder than *Pebles*; but breaking irregularly as those do. *Agats*, *Cornelians*, *Chalcedonics*, *Onyxes*, and *Mochoes*, are no other than *Flints*: but finer than the Common; and have obtain'd those different Names from certain Differences in their Colours.

The true *Flints*, and *Pebles*, are all natural Nodules: and, many of them, were originally cover'd with a thin exterior Film or Crust, (Conf. c. 37. a. to c. 37. h. & c. 89. infra) that usually differs in Colour, Hardness, and Constitution from the interior Substance of the Body \*. This was their first State before they were repositied in the Strata †. Since which time several have been broken by some accidental Force: and others, tho very rarely, because of their great Hardness, have been worn, and had their investient Film fretted off by the Agitation and Motion of the Water, of the Deluge returning, (Conf. Append. to Cl. 2.) of the Sea, and of Rivers. But these, tho thus alter'd, may be judg'd of by their internal Constitution; and by their Hardness. These two Tests alone sufficiently distinguish them. As to their Form, they have that in common with the *Pyriræ*, and other Nodules: and indeed with certain small Masses of Stone, and of Marble, that are frequently found upon the Shores of the Sea, and of those Rivers that are impetuous, and their Water much agitated by Tides and Storms. These have indeed the Form

\* Of the Crusts of the *Ludus Helmontij*, vid. Class 4. part 3. x d. 25. Of the Crusts of *Amber*, g. 47. 9. 48. int. 2. Of *Pyriræ*, h. 36. & h. 40. h. 45. Of *Geodes*, *Mineral Bezoar*, *Ætites*, o. 102. † d. 1, & seq.

† Vid. *Natural History of the Earth*, Part 4. Conf. 23.

of Pebles, but not, ordinarily, either their Hardness or Constitution; and are never invested with a Film or Coat. They split regularly, and with a Grain like several Bodies that are lodged in Strata; which the true Flints or Pebles never do. In a word, they are only Fragments, beat off from the Strata of Stone and Marble in the neighbouring Cliffs; and worn into that Form by the Waves and Water. Of these there are Instances in the Appendix to the second Class; as also of those that were smooth'd and rounded by the Water, departing, at the end of the Deluge. Conf. c. 167. infra. & c. 227. infra.

Pebles, Flints, Agats, and all other Stones of the Flint-kind, are composed of Crystal; but ordinarily with an Admixture of Stoney, Mineral or Metallic Matter amongst it. Some Pebles there are that consist intirely of pure Crystal: and the more transparent and fine Flints, Agats, and the like, owe that Transparency to the Crystal in them. Those that are more Opaque, have less of this; and more Mineral, or Metallic Matter in them. 'Tis to this that the brighter Colours, Red, Yellow, Blue, &c. are chiefly owing. Conf. Cl. 11. 0. 82. infra.

Of flinty Matter formed into Strata. Vid. Pref. ad Sect. 5. Cl. 2.

When I came to review this Class, I found in it a considerable number of Bodies that exhibited nothing particularly observable or uncommon. All these therefore I have rejected; being not willing to incumber this Collection with Repetitions, and Things that exhibited nothing new, or different from the rest.

The Bodies of this Class being numerous, and ranked in haste, they are not in so good Method as was to have been wish'd. Then there are some Bodies in it, that a more careful Attention has taught me, do not properly belong to this Class; which I have noted in the Accounts of them.

#### *Pebles, Flints, Agates, and Stones related to them.*

c. 1. Small Pebles, from the bigness of the Seed of Rape to that of a common white Pea, some pellucid, others white, others brown, black, &c. all incorporated into one Mass, and cemented naturally together by a sort of ferruginous Matter. This is used for Mill-stones. From ——— in the Peak, Derbyshire.

c. 2. Another Mass, but the Pebles most of them much larger, and of different Colours. They are cemented together also by a sort of dark brown ferruginous Matter. In some parts of the Mass, the said Matter is formed into Crusts not unlike those of the Bezoar Mineral: and there are Veins of it running upon the Surface of the Pebles, and Flints, which (in this) are mix'd amongst the Pebles. Found near Southampton.

c. 3. Another Mass of Iron-stone, of a dusky red Colour, in which are eight or nine brownish-white Pebles, about the bigness of Wall-nuts. Banstead-Downs, near ——— Surrey.



c. \* 3. Another like Mass, with reddish Pebles in it, from *Whitehaven*. There are vast Masses of an hundred Weight and bigger, of this Matter, containing these Pebles, found lying in *Strata*, of Grey Stone in the Cliffs and on the Shores there.

c. 4. Pebles, white with a brown yellow, from the bigness of an Horse-bean to that of a Nutmeg, cemented together by a grey Flinty Matter, with very small red, black, yellow and white Spots; perhaps they may be small Pebles. The whole is cut into an Oval Plate, and that polished, both the Pebles and Cement taking a very good Polish. Here was a double Process; first of the Formation of the small Pebles; and next the Coalition of the Flinty Matter, that united and cemented them into one Nodule. From — near *Barkhamstead*.

c. 5. Another Oval-Plate, in which the Pebles are some of them of about the bigness of an Horse-bean, the rest generally less. They are black, white, grey, yellow, and variegated. The Ground, or Cement, pale-grey, with a Cast of yellow in some places. The whole takes a fine Polish, and 'tis a very beautiful Stone. *Barkhamstead*.

c. 6. Another like Plate, the Pebles much of the same bigness with those of the foregoing: most of them are black, the rest grey. The Ground or Cement is of a brownish yellow Colour. It takes a fine Polish, and the whole is very elegant. *Conf. N. c. 7. infra*.

c. 7. The Stone, off which the precedent Plate was cut. 'Tis a large Nodule of a compress'd round Shape, the Surface pretty smooth, the whole outwardly appearing like a yellowish Pebble with black Spots. Found in a Gravel-Pit on this side *Tatnum-Court*, along with *N. 263. infra*. The Surface of this, rightly consider'd, shews it to have been rounded, worn and smooth'd by the Motion of the Water. *Conf. Appen. to Cl. 2.*

c. 8. Pebles of much the same Sizes with those in the three foregoing. They are white, with some degree of transparency. They are held together by a brown Cement. The whole is of a flat oval Form, about two Inches long. The Surface is worn and smooth'd, but not quite so smooth as that of the former: but it takes a fine Polish. *Hempstead, Hertfordshire*.

c. 10. Many small white Pebles, with a few black, held together by a red Cement. The Surface of the whole very smooth. Found in the North-field of *Draycote*, on that side towards *Risby*, in *Derbyshire*.

c. 11. Many small Stones, generally about the bigness of Pease, and flattish, held together by a pale-brown coarse Cement. From — Hill in the Road between *Cirencester* and *Gloucester*. There is a vast Quantity of this sort of Mass in the said Hill; and, on the Sides of it, prodigious Numbers of the same sort of small Stones, loose, and disengaged from the Cement. Perhaps these may be of that sort that the Antients call'd *Pisolithi*. There is a piece of a striated *Pectunculus* incorporated in this Mass. "Near — a Sc—  
" pulchral



“ pulchral Monument, shewn for *Rachel's Tomb*, *Gen.* 35. 19. not  
 “ far from *Bethlehem*, in *Judæa*, are found a sort of small round  
 “ Stones exactly resembling Peas.” *Mr. Maundrell's Journey from*  
*Aleppo to Jerusalem.* p. 86. *Strabo* Geogr. l. 17. p. 508. d. takes  
 Notice, that in *Egypt*, near the Pyramids, there were Heaps of the  
 Chippings or Hewings of Stone. [*λατύπης σαρκοί τινες*] And in these  
 were found Stones of the Shape and Bigness of Lentils. [*Ψήγματα*  
*καὶ τύπω καὶ μεγέθει φακοειδῆ.*] The fancyful Tradition of the Inha-  
 bitants concerning these was, that they were of the Remains, of  
 what were wont to be eat by those that work'd in Building the  
 Pyramids, in tract of Time turn'd into Stone. He observes also  
 that there were plenty of these *Lenticular Stones* on an Hill, where  
 he dwelt, in *Pontus*, ib. *Plin.* l. 36. c. 12. p. 654. b. *agens de Pyramid.*  
*Æg.* — “ *Harena late pura circum, lentis Similitudine, qualis in*  
*“ majori parte Africa.*”

c. \* 11. Small Nodules, some round, others oval, of a dusky grey  
 Colour; found in a Stratum of Shiver, in *Arkendale, Yorkshire*.  
 The biggest of these do not much exceed the Size of the common  
 Bean: and there are seldom larger found.

c. 12. A Flint perfectly pellucid, of a lenticular Form, the lon-  
 gest Diameter about an Inch and a Quarter. The Surface is very  
 smooth and polite. This was given me for *English*; but I have  
 forgot where 'twas found: and the Person that gave it me is now  
 dead. There are said to be of these Stones found somewhere a-  
 bout *Bristol*. *Dr. Lister* has described and graved some of them.  
*Philos. Transf.* N. 201.

c. 12. a. A Crystal, or pellucid Flint, wrought into an orbicu-  
 lar Form, found somewhere in *England*. This is of that sort  
 that is call'd *mineral Pearl*: and probably the same mentioned by  
*Suetonius*, in *Cæsare*, §. 47. “ *Britanniam petiisse spe margaritarum,*  
*“ quarum Amplitudinem conferentem, interdum sua manu exegisse*  
*“ Pondus.*”

c. 13. Another Crystalline Flint, of an oblong Form, \* the Basis  
 near flat, the upper Part terminating in a Ridge. The Base, and  
 Sides are not plain, but somewhat swelling and convex. 'Tis  
 regular and polite, as if wrought by Art. *Conf.* N. 12.

I have since shewn this to some Lapidaries; who agree that this  
 Body is cut and polished. 'Tis part of a Crystalline Nodule. There's  
 one of this Figure set forth by *Dr. Lister*, *Phil. Transf.* N. 201.  
 who thinks these *naturally Polished*, but erroneously: 'tis very  
 probable all these Bodies were us'd for Ornaments among the an-  
 cient *Britains*. *Mr. Aubrey* was wont to assert they were us'd in  
 Magick by the *Druids*: and I believe intimates some such thing  
 in his *Natural History of Wiltshire*; for which he had made Col-  
 lections. They are now in two Volumes MSS. in the *Ashmolean*  
*Museum* in *Oxford*. In his *Miscellanies*, 8vo. *Lond.* 96. p. 128.  
 c. 15. he mentions a Crystal Sphere, or Mineral Pearl, used by

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\* See *Dr. Plat's N. H. of Staffordshire*, p. 178.

Magicians: and to be inspected either by themselves or by a Boy. Mr. *Webster* in his Book of Witchcraft also treats of these Bodies. c. 16. p. 310. & seqq. This was found near *Barkhamstead*: and made use of, as Mr. *Steel* informs me, by the late Dr. *Woodhouse*, there, as a Magical Speculum, he pretending that a Spectrum was wont to discover it self to him in it. Mr. *Steel* fancies the Glass, as 'twas call'd of Dr. *Dee*, and Mr. *Kelly*, mention'd by Dr. *Merie Casaubon*, was of this sort. For my own part I can imagine these to be nothing other than Baubles, used formerly as Ornaments by the *Britains*, while Savage, and before the access of the *Romans*. Mr. *Morton* found one of this sort in *Kettering-Field*, *Northamptonshire*.

c. 14. A Pebble, about the bigness of a Walnut. 'Tis wholly pellucid. From . . . . . *Oxfordshire*. This kind the Lapidaries call *Pebble-Crystal*. The Crystallin hexagonal Columns they call *Sprig-Crystal*.

c. 15. Another, somewhat less, also pellucid. *Ibid*.

c. 17. 4. Pellucid Pebbles about the bigness of Pease. One of them I got out of a gritty Stone, made up chiefly of such Pebbles, cemented together, near *Worcester*: the other three out of a reddish gritty Stone, much like that N. 1. *infra*, near *Belpor* in the *Peak*. There are vast Quantities of that sort of Stone about *Belpor*, *Worksworth*, and the Places thereabouts in the *Peak*. It lies in Strata. There are mighty Rocks of the same sort about . . . . . in the Forrest of *Dean* in *Glocestershire*: and the Pebbles and Flints, contained in them, are of all Sizes, little and large. Their lying thus in Strata is a Proof that the Pebbles and Flints were single, independent and apart till after the subsidence. When the Matter subsided down with them, and settled in the Intervals of them, consolidating, became a Cement to hold them together.

c. 18. A Crystallin Flint, cut Diamond-wise. 'Tis of a clear Water, and fine Polish. 'Twas found in a Field near *Croydon*, *Surry*.

c. 19. A light grey Semi-pellucid Flint. 'Tis of much the same Complexion with the common *Indian Achate*. On one Part of the Surface 'tis thick set with Tubera like small Bubbles. Found in a Gravel-Pit, near *Kentish-Town*. *Vid*. N. 263. *infra*.

c. 20. A piece of the foregoing cut into an oval Plate, and polish'd.

c. \* 20. A Plate of an *Agate*, no ways inferior to the finest oriental *Agate*, and nearly approaching the white *Cornelian*. There are in the horney Ground two white Lineations; attended with two of a pale Red, not discernible unless held up to the Light. The Stone, off which this was cut, was found near *Gaddefden magna*, *Hertfordshire*.

c. 21. Three round Plates, cut out of a Flint, approaching the nature of an *Agate*, and indeed very much resembling those *Agates* call'd *Mocha Stones*, with Appearances of Shrubs in them. The Stone, off which these Plates were cut, was found near *Stratford* in *Essex*:  
and

and, having in it a striated *Concha Anomia*, is exhibited in the 2d Part of this Catalogue, of the extraneous *English Fossils*, f. 346.

c. 22. A Semi-pellucid grey Flint. In the Body of it are white Plates or Flakes, usual in some of the *Indian Achates*, which this resembles and equals in all respects. 'Tis cut, and polish'd. Found by the *Thames* side, on *Lambeth Shore*.

c. 23. A Flint much like that N<sup>o</sup> 19. only scarce so clear. *Tatnum-Court, Middlesex*.

c. 24. Another of like sort: only one part of it is of a brownish white Colour, and Opake. Broke off a Flint on *Sydenham Common, Surrey*.

c. 25. A pellucid Pebble, with a faint Eye of Green. 'Tis about the bigness of a Nutmeg. There appear in it several long round Bodies of the thickness of small Pins. They are placed at uncertain distances, but near parallel to each other, and run slanting across the Pebble, which is a little flattish, and both ends of them terminate in small holes at the two opposite Flats of the Surface of the Stone. They are of a green Colour, and appear very plainly and distinctly in the Body of the Pebble. Found on the Shores near . . . . . in *Cumberland*.

c. 26. Another Pebble, red and semi-pellucid, less than the foregoing. There are in this several Columns, little different in any respect from those of that, only they are white. Found on the Sea-shore, near . . . . . in the Bishoprick of *Durham*.

c. 27. A Pebble of the bigness of a Nutmeg, white, with fine streaks of red on the Surface, and thorough the Substance of it. 'Tis semi-diaphanous, and takes a fine Polish. Found on Plow'd Lands a little beyond *Henley upon Thames*.

c. 29. A Pebble of a flat oblong Shape, somewhat bigger than an Horse-bean. The Surface of it is smooth and very fine. 'Tis opake, and of a dark green Colour. Found with N. 26, & 27.

c. 30. A small Pebble, semi-diaphanous, yellowish, with slight streaks of a somewhat darker Colour. Found on the same shores.

c. 32. A Pebble, semi-pellucid, brownish, with Spots of a whitish hue. On one side is a Cavity, the sides of which are beset with a Crystalliz'd Spar. Found on the same Shores.

c. 33. Another Opake, its Surface finely variegated with Spots of a Flesh-colour, a dark red, and streaks of white. The same Shores.

c. 34. Another, very transparent. In the Center of it is a fine Cloud of red. The same Shores.

c. 35. Another, the out parts pellucid, the middle opake, and of a very bright red. From the hither Edge of *Blackheath*, near *Deptford*.

c. 37. A grey Pebble, pellucid, having on one Part very many thin white triangular Crusts, one within another, appearing like a Nest of triangular Boxes set one in another. From the same Shores.

\*37. Another whitish with a Cast of red; having many like Crusts in it. From the Shores near *Whitehaven* in *Cumberland*. These Crustaceous Pebbles, *Flints*, and other Nodules of like Con-

struction, particularly the native *Bezoar* mineral, *Geodes*, &c. The Beginning or first Advances towards a Formation, was by the Congress of certain of their constituent Corpuscles at one Place or Punctum, where they formed a Nodule. Other Matter succeeding towards the same Point, on all sides the Nodule, and affixing upon it, still augmented the bulk of it. When it so fell out, that this Matter was of the same sort with that that concurred before to form the central Nodule, there could be no variety of Colour, or Consistence, from this or any more like Additions that were made to it. And 'tis highly probable that all the Nodules, that consist of one uniform Substance, were as well formed thus, beginning from a Point or Center, as the crusted ones: Nay, and most of the spotted, variegated and clouded ones too, and all others, however mix'd and variegated, or how different Matter soever might concur to the forming them, and indeed all whatever except those that are tabular and plated, of which *vid. c. 209. Cl. 3.* But where the said succeeding Matter was not of the same sort with that of the central Nodule, 'tis distinguishable by its Colour, or Consistence, and appears upon breaking or cutting the Body. as a Shell or Crust enclosing the central Nodule. Again, other Matter still succeeding, and applying it self on all sides quite round this first Shell or Crust, where 'twas of a different sort, it constituted a second Crust covering the former. A third application of different Matter constituted a third Crust: and so on, as long as a successive Application of different Matter continued.

The thickness of *each Crust*, is greater or less, as the Quantity of Matter so succeeding to form it was greater or less.

The same Crust is in all Parts of the same thickness, when there happened to be an appulse of an equal Quantity of Matter on all sides the Nodule, or, if there were such before incrusting round it, the interior Crusts\*. But where the Quantity of Matter so applying it self was unequal, and more on one side than another, there the Crust, form'd of it, is of different thickness in different Parts; which is frequently observable in the Crusts of Nodules. Hence 'tis that we commonly find the central Nodule not in the middle, but approaching nearer one side of the Stone. Of this there are Instances *infra*.

Where the Matter that formed any single Crust was homogeneous and all of the same sort, the Crust is uniform and of the same Colour and Consistence: but where 'twas different, the Crust formed out of it differs in Colour or other ways. This is the Cause of all the Varieties observable in the same Crust.

Where the Matter that successively applied it self to the Nodule in its Formation was on one side homogeneous and entirely of the same sort, on the other side of different sorts; the Stone formed of such, would be on one part uniform, on the other crusted with half Crusts or Hemispheres.

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\* Of this *c. 37. a. c. 37. c. d. and e. are Instances.*



Where the central Nodule was globular, the inner Surface of the first Crust would be Spheric; and if the Crust was in all parts of the same thickness, that whole Crust would be Spherical. But if the Surface of the central Nodule was unequal and irregular, the Crust formed upon it would be so likewise. So also for the several succeeding Crusts each without the other.

If the Matter whereof the several Crusts were formed happen'd to differ in Diaphaneity, Colour or several other Respects, yet agreed in Hardness, Figure and Disposition to unite and consolidate, the several Crusts would cohere and form one common Solid, as they do in *Flints*, *Agats* and the like. But if the Matter of the several Crusts happened to be of different Constitutions, such as indispos'd them to unite, then they part and separate upon breaking the Stone, as is observable in the Native mineral *Bezoar* and *Geodes*.

c. 37. a. A piece of a Flint, broken off to shew the interior Constitution of it. 'Tis of an oval Figure. In the Center of it is an oblong blackish oval Spot, which is surrounded with a Line of brown; and that encompass'd with a Line of white: the white with another of brown: and without all is a pretty thick Crust of white. The others that I call Lines are indeed so many Crusts, contained in one another: all of them passing the Substance of the Stone, and being conspicuous in the same Manner and Order on the opposite Face of it; only the second Section is not thorough the central Nodule, but thorough the first Crust. In this Stone, the central Nodule has its Surface pretty smooth and regular: and the several Crusts about it are, in all parts, of nearly the same uniform thickness. *Hamstead-Heath*.

c. 37. b. Another *Flint*, likewise broken. In the Center 'tis brown: round that is a Circle of white: then one reddish mixt with white: after that, a very thin one of black: and lastly, a Crust of white. *Hamstead-Heath*.

c. 37. c. A coarse *Flint*, of a triangular shape, broken also. 'Tis of an Ash-Colour, only about  $\frac{1}{4}$  of an Inch from the Surface is a triangular Line, about  $\frac{1}{10}$  of an Inch over in all Parts of it, of a reddish brown Colour. This lay near the former. I broke a vast many of the Stones thereabouts, and found them of like Construction; consisting of Crusts one within another.

c. 37. d. A *Flint*, broken. The middle part is of a pale brown Colour. Next that is a Crust of white: then a Crust of dark brown: and without all a thin Skin of white. The two Crusts, and Skin, are each in all Parts of them nearly of the same thickness. *Cane-Wood*, near *Highgate*.

c. 37. e. Another. In the middle is a large round Spot of grey with a Cast of green. This is surrounded with a pretty broad Circle of yellow. Without all is a Crust of brown. The Surface of the central Spot or Nodule is pretty smooth and regular: and the two Crusts (for in reality that, which with such a Section of the Stone appears only as a Circle, is part of a Crust) about it in all Parts of near the same thickness. *Newington-Green*, *Middlesex*.



c. 37.f. Another. In the middle is a Spot of a Grey, pellucid, or horney Constitution. Without that, is a thick Crust, opaque, and of a pale brown Colour. Found in a Corn-field near *Northfleet, Kent*.

c. 37.g. A small *Flinty Pebble*, broken so as to discover the interior Constitution of it. In the Center is an oval white Spot, as it appears in the Plane of the Segment of the Stone, but is indeed a Nucleus. Round this appears a blackish or rather a deep grey oval Ring, which is an oval Crust, including that Nucleus; 'tis about  $\frac{1}{10}$  of an Inch thick. Without this is an oval Ring or Crust of white, like that of the Nucleus,  $\frac{1}{10}$  of an Inch thick. Lastly, without all, is an oval Crust of the same deep grey again  $\frac{1}{10}$  of an Inch over. Found in a Gravel-Pit in *St. George's-Fields, Southmark*.

c. 37.h. Another broken in like manner. In the Center is a red oblong Nucleus. This is invested with a black Crust. That Crust is surrounded with a grey Crust. Then a black Crust again: next a grey; and so on to the Surface alternately; there being in all eight of these Crusts, *viz.* four of each Colour. The Crusts are each in all Parts nearly of the same thickness, their Figure suited to the Nucleus, and the outer Surface of the Stone exactly of the same Form with that of the Nucleus.

c. 38. Another almost opaque, but thick set with Crusts of various and uncertain Figures encompassing one another. Found near *Malden, in Essex*. Mr. *Buddle*.

c. 39. Another with like Crusts. This is somewhat more transparent, and one half of it has an Eye of red. From the Shores of the Bishoprick of *Durham*.

c. 40. Several like pellucid, lineated or crusted *Pebbles*. Some of them are besides spotted and streaked with red, yellow, and white. Found in several Places on the same Shores.

c. 41. A black *Flint*, cut and polished. In the middle of it are several Lines of grey and white alternately, which appear very beautiful and fine, especially as being so beset and environ'd with black. *Gravesend, Kent*.

c. 42. A *Flint* elegantly diversify'd with Stripes of a dark brown near black, and grey, alternately. The darker Stripes are not so broad as the grey ones. *Shooters Hill, Kent*.

c. 43. A Plate cut off the foregoing, and polish'd. It takes a good Polish: and being held betwixt the Eye and the Light, the darker Stripes appear to be transparent.

c. 43. ★ A Plate off an *Agate*, with a Series of Stripes, white and blackish alternately, passing the middle of it. *Gaddesden magna, Hertfordshire*.

c. 44. A *Flinty Pebble*, the Ground grey, with an Eye of green, striped with white and yellow. It takes a good Polish. *Greenwich Park*.

c. 45. Another, the Ground much the same, but in some Places clouded with yellow. 'Tis striped with red and white. The Stripes

Stripes run round into an oblong oval Form, and environ one another. Indeed they are properly Crusts within one another, and seem to be made by a successive Application of different Matters as it came to hand in the Formation of the Body, beginning at the Center, and so concreting and crusting successively Crust upon Crust, the diversity of the Matter that came on in course, causing the diversity of Circles and Colours. Found in the Road near *Bromly* in *Kent*.

c. 46. A Plate cut off the foregoing Stone, and polish'd, with good Success.

c. 47. A *Flinty Pebble* black without, lineated within with Stripes of white, yellow and red, encircling one another, the innermost surrounding and including a dark blue Spot. Found in the Road near *Deptford*.

c. 48. A Plate cut off the same, and polish'd with good Success.

c. 49. Another Plate having a Spot of blue near the middle of it, and that surrounded with red and white Stripes alternately. On one side is a Line of yellow. It has taken a good Polish. This was cut off a very large Flint Pebble, found on *Hamstead-Heath*.

c. 50. A Plate beautifully striped and clouded with Purple, dark red, and yellow. It takes a fine Polish. The Stone was found, on the Brow of the Hill, near the Mill on the Edge of *Hamstead-Heath*.

c. 51. Another Plate. It has a bright brown Spot in the middle, environ'd with a white, and that with a brown Circle, and so on alternately several Rounds. Found in a Gravel-pit, not far from the Bowling-Green on *Hamstead-Heath*.

c. 52. Another small round Plate, the Ground grey. In the middle is a Spot of yellow, surrounded with a Circle of red, that with one of white, and that with one of yellow, and without that are Circles of purple, blue, and yellow, but all very faint. 'Tis very beautiful, and the Polish fine. Found in the Gravel-Pit near the Bowling-Green. *Hamstead-Heath*.

The forty four following *Flinty Pebbles*, beginning with N<sup>o</sup> 53. and ending with N<sup>o</sup> 96. inclusively, are variously clouded, spotted, and striped or lineated, the Lines generally encircling and within one another, tho' variously disposed and figured. The Colours of the Spots, and Lines are very various, blue, yellow, brown, red, grey, and white. These I mention are the Colours of the interior Parts, the Bodies being broken to shew the inner Constitution of them, which is very close, and hard, so that they are capable of a good Polish.

c. 53. A *Flinty Pebble* striped circularly. Found in a Gravel-pit near *Islington*.

c. 58. Another, found in the Gravel-Pit, near the Bowling-Green, on *Hamstead-Heath*.

c. 61. A Plate, cut off a *Flinty Pebble*. Found in a Gravel-Pit, amongst the new Buildings by *Dover-street*, near *St. James's*.

c. 65. Another. Found in *Greenwich-Park*.

c. 70. Another. Found in the Road, a little on this side *Hamstead*.

c. 71. Another. Found at the Foot of the Hill, about a Mile on this side *Hamstead*.

c. 73. Another. Found in the Road, a little on this Side *Hamstead*.

c. 77. Another. Found in the Road, a little beyond *Kentish-Town*.

c. 78\*. A large oval Plate, cut off a *Flinty Pebble*. Found in a Gravel-Pit, near the *Bowling-Green* on *Hamstead-Heath*. It takes a good Polish, and is a very fine Stone.

c. 89. Another, broke in two. From a Gravel-Pit near *Gravesend*. I once was in doubt, whether the blackish Coats of these *Flinty Pebbles*, (so common in *Surrey*, *Kent*, and *Middlesex*.) were their original outmost Coats. But View of this, of that, c. 95. and indeed those, c. 37. a. to c. 37. b. as also c. 58. c. 65. c. 77. and c. 90. with very many others that I have observ'd since, have satisfy'd me that they really were. For these Coats, in Shape, nearly conform to the Lincation or Coats within. Which they never could possibly have done, had they been alter'd and worn by the Motion of Water, or the like, in Bodies of this irregular Form. In Bodies of a globose Form, they might.

c. 90. Another, broke in two. From still the same Gravel-Pit,

c. 95. Another. Gravel-Pit near *Gravesend*, *Kent*.

The following *Flinty Pebbles*, are very few of them striped, but spotted, and clouded very variously, and many of them in a very elegant and beautiful manner, with Black, Blue, Yellow, Red, Purple, White, Grey, and Brown. They begin with N<sup>o</sup> 97. and end with N<sup>o</sup> 129. inclusively. They are as firm, and capable of as fine a Polish as the other.

c. 97. A *Flinty Pebble*, spotted with Yellow. The Body of it is semi-pellucid. 'Tis cover'd with a very rough grey Cortex. Found in *Kensington Gravel-Pits*.

c. 98. Another, on one part flat, on the other convex; found near *Woolwich*. This has the Convex Part cover'd with a Crust, as the Outlides of these Bodies constantly are; but the flat has no Crust, but is in Constitution like that of the inner Substance of these Bodies. And doubtless there was a natural Flaw and Crack there; at which the Body parted, and fell into two pieces. Such Cracks we frequently observe in them, when lying in their Strata, and before any external Force could come at them to break them. And some there are that part at those Cracks, with the greatest ease imaginable. 'Tis likewise the Case of those, c. 180. c. 37. b. c. 37. a. c. 178. c. 179. c. 214. c. 233. c. 232. c. 251. c. 307. The grey Lines on the flat, enter not the Substance; seem to be superficial, and owing to an external Agent.

c. 102. Another, found in the Gravel of the *King's-Bench Walks* in the *Temple*. This seems to have been parted like that, c. 98. and the flat seems to have suffer'd by some external Agent, perhaps

kaps Water; and to have been a little rough'd, perhaps by being moved and slid on by the Water departing at the end of the Deluge. I have commonly observed *Flinty Pebles* with their Flats rough'd like this.

c. 106. Another, broken off N<sup>o</sup> 154.

c. 112\*. A Plate cut off a *Flinty Peble* found near *Greenwich, Kent*. 'Tis an elegant Stone, hard, and the Polish admirable.

c. 113. Another. Found at the foot of the Hill, in the Road, a Mile on this side *Hamstead*.

c. 114. A Plate cut off a *Flinty Peble*. Found in the *Gravel-Pit*, near the *Bowling-Green* on *Hamstead-Heath*.

c. 115. A Plate cut off a *Peble*. Found in the Road a little beyond *Kentish-Town, Middlesex*.

c. 116. A *Peble*. Found in the Road near *Deptford*.

c. 117. Another. Found in the *Gravel-Pit* near *Islington*.

c. 129. A *Flinty Peble*, semidiaphanous, not unlike the *Achate*, the Ground grey, with Spots of Red; only towards the Surface it terminates in a Yellowish. Found in a *Gravel-Pit* near *Gravesend, Kent*.

c. c. 129\*. A Piece of *Flint*, having, on one side, extremely small Sparks of Crystal: The other side, being polish'd, exhibits several Colours, chiefly red and white, finely intermix'd. The Stone nearly approaches a Jasper. *Nerleden, Buckinghamshire*.

c. 130. Another, the Ground more pellucid, of an horny Appearance, and as fine as the *East-Indian Agat*. 'Tis spotted, like the two former, with red Spots. The Outside of this is smooth, clear, and shews the Spots at and underneath the Surface. Found near - - - in the *Peak*.

c. 131, 132. Two oval Plates, cut off the foregoing, and polish'd. They are of a very fine Polish, and beautiful Stones.

c. 135. An oval Plate cut off a *Flinty Peble*. Found in the Road about a Mile on this side *Hamstead*. It takes an admirable Polish: and is indeed a fine Stone.

c. 136. Another oval Plate, finely variegated with Red, Purple, Blue, a semidiaphanous Grey or Skye, Yellow, and Brown. The Polish is extraordinary. The Stone was found in the Road, on the Brow of the Hill about half a Mile on this side *Hamstead*.

c. 137. Another Plate, variegated with Blue, Grey, White, Red and Yellow, in an elegant manner. The Polish very good. The Stone off which this was cut, was found in a *Gravel-Pit*, near the *Bowling-Green* on *Hamstead-Heath*.

c. 138. Another Plate, variegated with White, a light Grey, a more duskey Grey, Yellow, and a few faint small Spots of Red. 'Tis finely polish'd. This, and that, N<sup>o</sup> 147. were both cut off the same Stone, which was found at the Foot of the Hill, in the Road, near a Mile on this side *Hamstead*.

c. 139. Another oval Plate, variegated with Yellow, Red, Purple, and White; the Colours very lively, and the Polish excellent. This was cut off the Stone, N<sup>o</sup> 154. *infra*, which was found in the same Road with the precedent, on the Brow of the Hill.



c. 140. Another oval Plate, variegated with White, Red, a pale Yellow or Straw-Colour, and Brown, with a faint Eye of Green. The Polish is good. The Stone was found, in the Road, a little beyond *Kentish-Town*.

c. 141. Another oval Plate, variegated with a semidiaphanous Grey, Red, Yellowish, and Brown. The Polish is extraordinary, and 'tis indeed a fine Stone. Found in a Lane about a Mile on this side *Hamstead*.

c. 142\*. A *Flinty Pebble*, cut and polish'd; variegated with Red, Yellow, and White. Found, in the Road, about a Mile West of the Church of *Gaddesden Magna, Hertfordshire*.

c. 143. Another *Flinty Pebble*, variegated in a very lovely manner, with a semipellucid Agat-like Grey, Red, and Yellow. Found on the Brow of the Hill, in the Road, a little on this side *Hamstead*.

c. 144, 145. Two oval Plates cut off the foregoing Stone. The Polish is excellent, the Colours lively and distinct, and the Stones little inferior to any *Indian Agat* I have seen.

c. 146. Another oval Plate. The Ground a dark semipellucid Agaty-Grey, very like that of some *Mocha-Stones*. There are a few Spots in it more clear and pellucid; and one pretty large, part of it being of an Opaque White, and part of an Opaque Ash-Colour. But what is most curious and observable, is, that there runs obliquely a Line (of about  $\frac{1}{4}$  of an Inch in breadth) for almost the whole Length of the Stone; which seems to consist of several small Cells, much like those of an Honey-Comb, only considerably less. The Parietes, or Partitions of them, are white and opaque. They are fill'd with a grey semipellucid Matter, but in some parts darker, in others clearer, being indeed little different from that that constitutes the main Ground of the Stone. The *Flinty Pebble*, off which this Plate was cut, was found near *Carlton, Kent*.

c. 147. Another small oval Plate. On one part 'tis of a fine semipellucid Agat-like Grey; in the middle Yellow; that is succeeded by a Line of Red; and that by Spots of a darker and lighter Grey, and of Red. 'Tis a beautiful Stone, and bears a fine Polish. This was cut off the same Stone with the Plate N<sup>o</sup> 138. *supra*.

c. 148. A very small Stone, cut into a convex Form on one side, and a flat on the other. The Basis is grey and opaque, the Middle white and opaque, and the upper Part of the Convex yellow and semipellucid. *Hamstead-Heath*. 'Twas originally of this Shape, and is only lessen'd so far as the polishing required.

c. 149. Another, of like sort and opaque. The Basis White, the Top of a dark Ash-Colour. The *Pebble* off which this was cut, found on the top of *Oak of Honour Hill, Surrey*.

c. 150. A small white Stone, cut into an oblong Convex Shape, the Basis flat. 'Tis sprinkled with very small Spots of Red, and cross'd obliquely with a Vein of the same Colour. It has taken  
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a fine Polish. The *Pebble* was very little bigger than now 'tis cut. 'Twas found by the Brook-side near *Luisham, Kent*.

c. 152. An oval Plate of a yellowish Brown, and clouded in some Parts with a darker Brown. 'Tis opake, but takes an excellent Polish. Found in the Road, about a Mile on this side *Deptford*.

c. 154. A *Flinty Pebble*, finely variegated with Purple, Red, White, Grey, Yellow, with a faint Cast of Blue and Green. *Conf.* N<sup>o</sup> 139. *supra*. That Plate being cut off this Stone: as also N<sup>o</sup> 106. that Stone being a piece of this.

Eleven *Flinty Pebbles*, beginning with N<sup>o</sup> 156. and ending with N<sup>o</sup> 166. lined like those N<sup>o</sup> 53, &c. *supra*.

c. 158. Another, from the same Pit.

c. 161. Another, broke into two Pieces. From the same Gravel-Pit.

c. 167. A *Pebble*, of an oval Shape, the Colour very white, and its Surface very smooth. Found on the top of a Hill near *Henly, Oxfordshire*. This is of a Sparry Constitution, and apparently worn and rounded by Water. *Conf.* 27. *supra*, & 187. *infra*, & 192. *infra*, & 227. *infra*.

c. 168. Another, of a globular Form, but somewhat compress'd; the Surface pretty smooth, and of a light whitish brown Colour. Found near *Warwick*.

c. 169. A *Flint*, of the same Shape, the Surface very smooth, and of a dark grey Colour. 'Tis whole, but seems to be semipellucid. Found in a Gravel-Pit in *Hyde-Park*.

c. 170. A *Pebble*, round, and of a Figure more compress'd. 'Tis of a dark yellow Colour. *Kensington Gravel-Pit*.

c. 174. A Piece of the common black *Flint*, broken, and wholly divested of its outer Crust. 'Tis gloss'd all over with a Brass-like shining Armature, like that of the *Cornua Ammonis*, and other like Bodies that are found in the Earth, together with the *Pyrite*. This was found in a Rivulet near *Hockson, Suffolk*. Mr. *Adam Buddle*. All the *Flints* in the same Rivulet were tinged with the same shining Gloss. *Qu.* Is the Water of this Rivulet impregnated with Vitriol? or are there any *Pyrite* in it?

c. 175. A black *Flinty Pebble*, with several large white Spots, and one of a light brown. What is observable in this Stone, is, that the Spots are of the same Colour throughout, even to the very Edges, there being an immediate Transition from White to Black, and the Colours not fading or declining gradually, and mixing as they approach each other. Found on *Shooter's-Hill, Kent*.

c. 176. An oblong, black, *Flinty Pebble*, the Surface pretty smooth, and having on it three large yellowish Spots, of much the same Size and Figure, in both those respects much resembling a Garden-Bean.

c. 177. A dark grey semipellucid *Flint*. In one Part of it is a Delineation in white, not unaptly resembling a human Face. The Marks of this sort are wholly contingent, and so scarcely worth notice.

notice : but there are those who set a Value upon them, so that I thought such not altogether to be neglected, and therefore mention this, and the two or three more that follow. Found near *Clapham, Surrey*.

c. 178. A yellowish *Flint*, with a greenish Cast. *Newington-Green*. There is naturally delineated upon it, in a pale Yellow, a Figure somewhat resembling a Scorpion, in an Hollow of the Stone. There's another broad Hollow on the opposite side of it. *Conf. N<sup>o</sup> 232. infra.*

c. 179. A grey *Flint*, with a Figure in white, resembling a waved or flaming Scymeter. Found near *Peckham, Surrey*.

c. 180. A *Flinty Pebble*, of a dark grey Colour, with an Eye of Purple. There are upon it two Figures in white, like the *Roman V*. Found on *Clapham-Common, Surrey*.

c. 182. A large, flat, *Flinty Pebble*, the Ground black, undulated in a very elegant manner, and veined with White. The Veins are in all parts of near the same Diameter, and about  $\frac{1}{10}$  of an Inch over. Found on the Shores of *Sheppy-Island*.

c. 183. Another, likewise very curious, and little different from the former, only the Veins are somewhat larger. Found on the same Shores.

c. 187. A *Pebble*, of a pale brown Colour, vein'd pretty thick with small Lines of a yellowish brown Colour, variously intersecting one another. Found on a Hill near *Henly upon Thames*. The Surface of this is very smooth, excepting that the Veins rise, and are somewhat more prominent than the rest of the Surface, tho' but very little. This appears to have been smooth'd and rounded by Water.

c. 191\*. Another, clouded with brown and a dark Red, and encompass'd with Zones of White ; to which, in some parts of them, is superadded an Eye of Red. Found, near *Sir John Mordant's Hospitall, on Black-Heath*.

c. 192. Another, of a reddish brown Colour. 'Tis surrounded with two Zones of White of about  $\frac{1}{10}$  of an Inch thick, nearly parallel to one another, and distant about  $\frac{1}{10}$  or  $\frac{1}{12}$  of an Inch from each other. They are indeed two white Plates, terminating in circular Lines or Zones at the Surface of the Stone ; but passing quite through its Substance, as appears by the breaking and view of the interior Constitution of it. Found in the Road near *Droitwich, Worcestershire*. This seems to be worn by the Motion and Agitation of Water ; which also I take to be the Case of c. 188. c. \* 191. c. 198. c. 199. c. 200. c. 230. c. 298. c. 276. This, on a Review, appears to be, not a *Pebble*, but rather a Fragment of some hard Stratum, probably of Marble, broke off, and rounded, by the departing Water of the Deluge. Which seems also to be the Case of c. 195, 196, 202.

c. 193. A *Flinty Pebble*, surrounded with many parallel Lines, or Zones of White and Grey alternately. 'Tis broken, and the same Lines discover themselves within through the whole Substance of it.

it. So that the exterior ones are no more than the Terminations of the grey and white Plates, of which alternately this Body is composed. *Bromly, Kent.*

c. 194. Another, very little different from the former. From a Gravel-Pit near *Gravesend.*

c. 194\*. Another, not differing considerably from the two foregoing. The Surface of this is extremely smooth and polite. Found in a Gravel-Pit on *Hamstead-Heath.*

c. 195. Another, of the same Composition still, only the Plates are one of a whitish, the other of a reddish Brown, placed alternately. Found near *Bewdly, Worcestershire.*

c. 196. Another, little different from N<sup>o</sup> 195. except that the Plates and Zones they end in, are broader. The Surface smooth for this sort of *Pebble.* Found not far from the precedent.

c. 197. Another, of yet the same Composition. In this the Zones are grey and yellow alternately. *Shooter's-Hill.*

c. 198. Another. The Zones white and brown. *West-End, Middlesex.*

c. 199. Another. The Zones grey and brown. The Surface exceeding smooth. Near *Woolwich, Kent.*

c. 200. Another. The Zones grey and yellowish. Found in *Greenwich-Park.*

c. 201. Another. The Zones white and a dark Grey. *Greenwich-Park.*

c. 202. Another, of an oblong Figure. In the Middle 'tis encompass'd with Zones of Black and Brown alternately: at each End 'tis only Brown. The Surface is smooth for this sort of *Pebble.* Near *Bewdly, Worcestershire.*

c. 203. A *Pebble*, of an oblong Figure, surrounded alternately with Ridges and Furrows. The Ridges are composed of a Matter that is hard and polite, and of a darker brown Colour than the Furrows. Found near *Bush-Hill, Middlesex.*

c. 203\*. Another, little different from the precedent, only 'tis smaller. *Islington.*

c. 204. Another, of an oblong Figure, and brown Colour. One half of it is ridged as the former: the other smooth. *Hyde-Park.*

c. 205. Another, of a rounder Form; but encompass'd with Ridges and Furrows, tho' not quite so deep as the foregoing. 'Tis of a reddish brown Colour. *Fulham, Middlesex.*

c. 206. Another, little different from N<sup>o</sup> 205. only 'tis of an Ash-Colour. *Kentish-Town.*

c. 207. Another, ridged in like manner. This has some degree of Diaphaneity. *Black-Heath, near Deptford.*

c. 208. Another, ridg'd also, and of a light brown Colour. *Islington.*

c. 209. A grey *Flint*, consisting of Plates variously apply'd to one another, their Extremities terminating in Ridges at the Surface of the Stone. *Holloway, near Highgate.*

c. 210\*. A black *Flinty Pebble*, oblong, with several like Plates in the middle of it. *Isle of Man*.

c. 210†. Another, oblong also, of a pale brown Colour, composed intirely of like Plates. *Silverton, Devonshire*.

c. 211. A *Flinty Pebble*, of dark grey Colour. In two or three Parts 'tis striped with Lines of White and the same Grey alternately. Found on *Black-Heath*, near Sir *John Mordant's* Hospital.

c. 212. Another, very little different from the foregoing. *Northfleet, Kent*.

c. 213. Another, Grey. At one end 'tis striped with small Lines of Grey and White. *Hamstead-Heath*.

c. 214. Another, Grey with an Eye of Green. At one end 'tis striped with Lines of Grey and White. *Greenwich*.

c. 215. A *Flint* of a light brown Colour. In one part of it is a *Sinus*, cross'd with Lines of Yellow and Ash-Colour, alternately. *Islington*.

c. 216. A Piece of a *Flint* cover'd with a white Crust, which is ridged and furrowed, tho very slightly. Being broken, it appears within to consist in some parts of Plates, White, and a very light Grey, alternately: in others 'tis only of a dark Grey. It has some small degree of Diaphaneity. Found in a Gravel-Pit, at *Green-Hythe, Kent*.

c. 217. A gritty *Stone*, of a reddish brown Colour, and globular Form. 'Tis about  $\frac{1}{8}$  of an Inch in Diameter. From a Brook near *Ottertton* in *Devonshire*, where there are great Numbers of them found.

c. 218. Another, somewhat less. From the same Brook.

c. 219. A *Flint* in shape of a small Pear. *Shooters-Hill*. At the lesser end, for half the length of it, 'tis White, the rest a dark Grey. There's a Stone in *J. Bauhin's* Book *de Fonte Bollenfi*, of much the same Figure and Size. He calls it *Lapis Cinereus Cystoides Judaico similis*: and has grav'd an Icon of it, p. 35.

c. 220. A brown *Flinty Pebble* of an oblong square Form, only the four Corners jet out into so many Prominencies gradually lessening till they end in a blunt Point, and are all of much the same Size and Shape. Found in *St. George's Fields, Southwark*, in a Gravel-Pit.

c. 221. A yellowish *Pebble* swelling out at one end in such manner, that it somewhat resembles one of the common pileated Mushrooms. The two parts appear as they would, had they been soft like Paste, and then stuck together. Taken up in *Hamstead-Town*.

c. 222. An oblong compress'd greyish *Pebble* with a very rough Surface, only there are two parts very smooth, of a much darker Colour, and tho plain, yet raised above the ordinary Surface of the Stone; appearing like two Pieces of Plaister stuck upon it. These Parts are closer and harder than the rest of the Stone. *Tatum-Court*.



c. 223. A *Pebble* of a light brown Colour, and oblong Shape, having two Appendages of the same Size and Shape, and opposite to each other jetting out on each side, about the middle of the Stone, so that it appears as if it were transfix'd by a Bolt. *Sheppey-Island, Kent.*

c. 224. Another, of a somewhat paler Colour, beset with several Protuberances, appearing like so many Warts lesser and larger upon its Surface. *Sydenham-Common, near Dulwich.*

c. 225. A *Flint* of an oval Shape, an Inch and a half long, and about an Inch over. 'Tis somewhat flat, terminating all round in an Edge. On one side 'tis white, somewhat rough, and rises into a regular oval Convex. The other rises likewise, but not near so much, is very smooth, of a yellow Colour with a Cast of Green, and has a Line of White, about  $\frac{1}{2}$  of an Inch over, round the Edge. This was found in the great Gravel-pit on the East-side of *Hyde-Park*. I have seen several in the Gravel about this Town of the same Shape and Colours, but all less than this.

c. 226. A gritty *Pebble* of a very light brown Colour, an oblong oval Shape, an Inch and  $\frac{3}{4}$  in length, and one Inch in breadth, flattish, and having the two Ends somewhat pointed. There's a narrow Ridge, of the same breadth in all parts, running directly long-ways of the Stone, and quite encompassing it. This Ridge consists of a closer and harder sort of Matter than the rest of the Stone. In the middle on one side, the Stone sinks in, and rises out on the opposite, as if it had been soft and press'd in that Part. Indeed it appears, upon the whole, as if it had been flat the quite contrary way of what it is at present, and the Ridge that now runs thorough the middle of the Flat, had terminated at the Edges of the Stone, till some exterior Force compressing the two opposite Edges, brought it to the Form it now obtains, which indeed is very odd and extraordinary. Not but that it might originally have concreted into this Form, and perhaps it did. Where the ordinary Surface of the Stone sinks in, the Ridge yields in proportion. 'Tis not likely that this Ridge was extant at the first Formation of the Stone. *Confer. N<sup>o</sup> 227. infra.* but it appears very naturally as if it had been soft, and then compress'd, and wrought into the Shape it now bears. I found it in a Gravel-Pit amongst the New Buildings by *Dover-street, St. James's*, in the Year 1688. and 'twas the first Stone I ever took notice of, or gather'd. *J. Bauhinus, de Fonte Bollenſi, p. 36.* has an Icon of a Stone not unlike this. He gives it the Title of *Lapis cinereus semiovalis costâ per mediam longitudinem leviter surrectâ.*

c. 227. A *flinty Pebble* of a darker brown Colour, and firmer Consistence, but much the same Shape with the foregoing, tho' it be of size somewhat less. Instead of the Ridge, mention'd in the former, this has a whitish Line environing of it length-ways, in like manner as the Ridge does that. This Line does not rise at all above the ordinary Surface, this Body being in all parts of the same Hardness. And possibly that which is now the Ridge



in that Stone, was originally not more raised than the rest of the Surface of the Stone, but being harder than the other parts of it, if the Stone was fretted or rubbed against other Bodies, 'tis certain the softer parts of it would yield soonest to the Attrition, and wear off the fastest; and this, more resisting the external Force upon it, would abide, and remain thus prominent, whilst the rest yielded, and wore off. 'Tis very certain, and there are multitudes of Instances in those Stones that are tumbled about upon the Shores by the Sea, agitated by the Tides and Storms, that the Parts that are softest wear fastest, and are hollow'd; whilst the harder, better enduring the Brunt, are prominent, and stand out above the others. The Stone, N<sup>o</sup> 226. lay in a Gravel-Pit, far from the Sea, or any River: and 'tis not likely but that it had lain quietly ever since 'twas first repositied there. But from Contemplation of this, and several others of like Constitution, *Conf.* N<sup>o</sup> 187. 203, & *seq. uti* & N<sup>o</sup> 222. 'tis evident that these Bodies have had their Surfaces ground, and worn, betwixt the Time that they were form'd in the Water of the Deluge, and that when they were repositied in the places where they are at this day found. Now that could never happen from any other Cause, than the Hurry, Precipitation, and rapid Motion of the Water, returning, at the end of the Deluge, towards the Sea, and the Apertures of the Abyss, which are at the bottom of it. For, from several Observations that I have made, which shall be all deliver'd in their proper place, I find that the Force of the Water, so returning, was so great, as to tear up some of even the most solid Strata, and bear vast Masses of them with it, tumbling them along, rounding and smoothing them, and leaving many of them behind, when its Force began to abate; of which there are Instances in almost all parts of the World. Lesser Fragments, and Nodules, were more easily born away, and rounded. That they were really so, besides this Argument, of the harder parts of these Nodules commonly standing out, and being more prominent than the softer, where they consist of two sorts of Matter, the one more firm and solid than the other; I take the Smoothness of the Surface of some *Pebbles* and *Flints*, their original native rough Coats being worn off, to be a Proof of the same Thing. This Smoothness is very observable in the Surfaces of c. 167, 168, 169, 187, 192, \*194, 196, 199, 202, all found in Gravel-Pits, or other Places where they had lain undisturb'd from the Time that they were first repositied there. And yet these have their Surfaces as smooth and polite as those, c. 186, 188, or any other that I ever met with upon the Shores, that had been ground and polish'd by the Agitation of the Sea. But there's yet another *Phanomenon*, that I take to be an undeniable Evidence of this Motion of the Water, and Attrition of the Stones hurry'd on by it. It is that the Nodules, that are made up of a Collection of smaller round *Pebbles*, of different Figures and Sizes, cemented together into one Mass or Lump, I say these Nodules have their Surfaces smooth. Thus in the No-  
dule;

dule, N<sup>o</sup> 7. *supra*, taken forth of a Stratum of Gravel, and that is made up of many black, small, flinty *Pebles*, held together by a yellowish Cement, tho all of them that are within the Stone, have some degree of Convexity, yet those at the Surface on all sides the Stone, terminate in a Flat that is coincident with the Plane of the Surface of the Nodule. Inasmuch that on the outside it appears like a yellowish *Peble*, spotted with black, the whole Surface being pretty smooth. The Stone is cut thorough the middle; by which means the Shapes of the *Pebles* that compose it are very evident, and their Convexity manifest. And it must needs be granted, that *Pebles* of that Shape could never by any Contrivance whatever be so disposed as to constitute a Body with a plain even Surface. Indeed it might be so order'd, that only a small part of the Surface of the black *Pebles* standing to the common Surface of the Nodule, the Interstices of the *Pebles* might be fill'd up with the Matter that constitutes the Cement, and so the Surface be render'd smooth. But then the black Spots must be small, whereas in this the Diameters are as large, most of them, as the largest Diameters of the Bodies of the said *Pebles*; which 'tis impossible they should, had only some small Portion of the Convex of them appear'd at the Surface of the Nodule. In short, they are as large as that Flat would be, after they were ground down to the Middle or Center. And indeed they appear here to have been ground so; for viewing the Face of the Stone where cut, the *Pebles* at the Surface of the Nodule have their inner Surfaces, I mean those towards the Center of the Nodule, constantly convex; whereas those Surfaces that terminate at the Surface of the Nodule, are every where near plane. So that these are there, some of them, Half Spheres, others Half-Ovals, and the like; but there are none of such Figures in the Body, or interior Parts of the Nodule. In fine, at the Surface of the Nodule there are some few *Pebles* of a firmer and closer Constitution than the rest; and these are more polite than those, and rise somewhat above the ordinary Surface of the Nodule, as having better maintain'd their ground, and endured the Attrition, than the rest could, that were not quite so hard. Upon the whole, here are so many Evidences that the Surface of this Body was originally uneven, and afterwards ground and wrought to a Plain, that the Thing cannot possibly be doubted of. Further Proofs of this we have in those, N<sup>o</sup> 8. & 10. *supra*, and other like Bodies consisting of *Pebles* cemented and held together in one Mass.

c. 228. An oval *Stone*, of a brown Colour with a Cast of Green. It somewhat resembles a Walnut, divested of its outer green Coat, both in Size and Shape; and is, in like manner, divided into two equal Parts, by means of a Line passing length-ways round it. 'Tis smoother and more polite on the Parts on each side the Line than elsewhere, which indeed are now somewhat more prominent than the other parts of it, and appear formerly to have been yet more so, but ground and worn down by Attrition against some other

other Bodies, by which means 'twas smoothed and polished. This is so evident from Inspection of the Stone itself, as not to be deny'd. *Brompton, near Chelsey.*

c. 229. A black flinty *Pebble* of a compress'd Form; and, indeed, both in Form, and Bigness, resembling a Garden-Bean. Quite round the Edge of it runs a Line,  $\frac{1}{12}$  of an Inch in breadth, and of a yellow Colour, with an Eye of Green. Gravel-Pit in *St. James's Park*.

c. 230. A triangular flinty *Pebble*, of a dark grey Colour, with a Cast of Green. It rises on each side into a Convexity. There runs quite round the Edges, and by the Angles of it, a Line of a yellow Colour, and about  $\frac{1}{8}$  of an Inch in breadth. There's also on the more convex side a part bunching out a little, of a yellow Colour with a higher Cast of Green. This, and the Line round the Edges, are smother than any other part of the Stone, and seem to have been ground down, thorough the exterior Coat, till the inner Constitution of the Stone appears. [Let it be cut, in order to discover whether it be yellow throughout.] 'Twas found in a Gravel-Pit in *St. George's-Fields, Southwark*.

c. 231. A *Pebble* of a light brown Colour, and of a gritty coarse Constitution. 'Tis encompassed with two parallel Lines of about  $\frac{1}{16}$  of an Inch in breadth, and at the Distance of  $\frac{3}{8}$  of an Inch from each other. These Lines are more prominent, and polite, than the rest of the Surface of the Stone; and of a firmer and closer Constitution. Indeed the whole seems to have been ground and worn, which these have endured better than the other less firm Parts, and so are more rising and prominent than they are. Gravel-Pit on this side *Hyde-Park*.

c. 232. A flinty *Pebble*, having six roundish Cavities in it, pierced through the Coats of the Stone to the medullar Parts of it; where 'tis of a dark green Colour. The exterior Cortex is of a Folio-mort Colour. The next under that a whitish brown. Then a Folio-mort again. And, lastly, the green Substance. These Cavities do not appear to have been caused by any breach of the Stone; but are as if six other Bodies had been contiguous to it whilst it was in Formation, and hindred the successive Application of the Matter, in order to the Continuation of the Crusts in those Parts or Cavities. *Conf. N<sup>o</sup> 178. supra. Kentish-Town.*

c. 233. A *Pebble* of a round compress'd Form, the exterior Surface very rough, of a brown Colour with Spots of yellow. There is a semilunar Cavity (naturally) in it, that is of the same Colour, but much smother than the Surface. *St. George's-Fields, Southwark.*

c. 234. A small, black, flinty *Pebble*, of much the same Shape with the former. The Surface is black, with a Spot of yellow. It has (naturally) a Cavity in it, smother than the Surface. Found at the Foot of *Shooters-Hill*.

c. \*234. A *Flint*, the outer Crust of an horney Grey, with some degree of Diaphaneity, like an *Agat*; the inner of an Ash-Colour,  
and

and opaque. In the middle is a clear Crystalline Matter, shot in some parts, where there was room, into hexagonal pointed Crystals. I have elsewhere set forth those Observations on *Flints*, and *Agats*, from which it appears that the Parts of these Bodies, that have an horney Diaphaneity, owe it to an Admixture of Crystal incorporated with the common Mass of the Stone. This was found near *Purfleet, Essex*. I have seen several *Flints*, that, when broke, had Cavities within, thick set on all sides with fine hexagonal Crystal Shoots, and after the manner of the concave Crystalline Balls; and some very fair, and pretty large.

c. 245. A *Pebble* of a light brown Colour. In one part of it the Surface is somewhat depress'd; and there, upon a Plane, are several small oblong Studds, each near as big as a Rape-Seed, placed regularly in a Quincunx Order, at the Distance of about  $\frac{1}{26}$  of an Inch from each other. The Plane is near square; and there are nine Rows of the Studds each way, from side to side. On one side of the Square the Stone is broken, and seems to be worn away on another; so that how far the said Plane might originally extend, is not to be known. 'Twas found in a Gravel-Pit amidst the New Buildings near *Dover-street, St. James's*. The Studds of this are smooth at top, and not abrupt; nor have they any appearance of being broken off from any thing else; which those of the following manifestly have.

c. 246. A grey *Flint* with a brownish Cast; the outer Coat grey. 'Tis split in two; and in one Piece are very many Studds, somewhat larger than those of N<sup>o</sup>. 245, and set closer together. They stand in an Order approaching a Quincunx, tho not quite so regular as in the foregoing. They are abrupt at top; and were originally continuous to the opposite Piece. The Surface, or Plane, whereon they are planted, is depress'd in three places, and rises gently in the Intervals. The Depressions, and Risings, are streight, and parallel. Whether there were not more of them; or how far the Plane extended, does not appear, this being only a piece of the *Flint*, and is intirely studded over. In the opposite piece of the *Flint* are several little Cavities, into which the Studds were implanted. The Intervals of the Cavities, rising a little, make a pretty kind of reticulated Work. The Surface of the Plane in this rises alternately, and is depress'd so, as to tally with, and answer the other. Found in a Corn-Field, near the *Thames*, by *Gravesend*.

c. 247. A brown *Flint* of a Conic Figure. The Basis is oblong, being one Inch and a quarter long-ways, and near an Inch across; and is somewhat depress'd or hollow'd gradually towards the middle of it. Round the Edges of the Base are two Ranks of Cavities, in each of which is placed a roundish Studd, about the bigness of a Grain of Millet. The Studds have their Surface punctulated, as if set all over with other Studds infinitely lesser. Near the Apex, or Top of the Cone, is a *Corona* or Circle of the same sort of Studds, but much broader, there being more of them in



some parts than in others. The Studds are of a much darker brown than the rest of the Surface of the Stone; and they being punctulated, and the ordinary Surface smooth, make the whole a very extraordinary Object. This I found in a Gravel-Pit near *Cambridge*. A very small piece of this *Flint* is broken off, which discovers it to be of a whitish grey Colour, very polite, and of a firm close Constitution within. *Vid. No 252. infra.*

c. 248. Another, of like Figure, but much larger. This is covered all over with a grey Crust; and has two Fragments of Spines of some sort of marine *Echinus* adhering to the Surface of it. Round the Edges of the Base of it is a Line  $\frac{1}{4}$  of an Inch in breadth, thick set with small Pores, and Studds, and there are some large flat Ridges running irregularly a-cross it. The Top of the Cone is cover'd with a Spot, rather inclining towards one side of the Body,  $\frac{3}{4}$  of an Inch in Diameter, studded and porous, for the main, like the Line round the Basis. Found in a Corn-Field near *Green-Hythe, Kent*.

c. 249. A dusky brown *Flint*, of a Conic Figure, but rounder and more slender, and having the Base less than either of the former. 'Tis about an Inch and a half long; and an Inch in Diameter. Round the Edges of the Base runs a Line about a quarter of an Inch over, and of a paler Colour than that of the rest of the Body. It sinks in for about  $\frac{1}{2}$  of an Inch, as if the Surface had been graved, and the Stone cut into by a Tool. The Margins of it, on each side, do not terminate in a straight Line, but are indented, each Indentation being continued in a small Ridge a-cross the Line to the Indentation that answers it on the opposite Margin. They are towards the Edge of the Base a little effaced, as if fretted or worn down. Round the Apex at top, 'tis encircled with a Line or *Corona* of much the same Breadth, and Work, as that at the Base. *Hamsstead-Heath.*

c. 250. A small grey *Flint*, cover'd with a whitish Crust, and of a Conic Shape; only the Basis is somewhat convex, and the Apex of the Cone not directly in the middle, but inclining towards one side of the Body. Round the Basis runs a Line undulating to and again, not unlike a Suture in a Skull. With a little Force the Body parted in two at this Line, the Cohesion being slight, and only an inconsiderable part of the *Flint* broke. The lower piece within is furrow'd pretty deep, and ridged alternately, the Ridges gradually rising and running up into an Apex or Cone in the middle. The upper Piece has a conic Cavity, ridged and furrowed in such manner as to admit and tally with the other. Found in a Stratum of Chalk about fifty Foot deep, in the great Chalk-pit at *Northfleet, Kent*.

c. 251. A *Flint*, cover'd with a dark grey Crust. On one part of the Surface is a Line of a pale brown Colour, about  $\frac{1}{2}$  of an Inch over, and sinking near half as much below the Surface. 'Tis undulated to and again, so that the Body in that part appears much like



like the Cerebellum of a Man. Found on *Gogmagog-Hills*, near *Cambridge*.

c.\* 251. Another, with the Surface undulated in like manner. Found near *Cambridge*.

c. 252. A greyish brown *Flint*, of an obtuse conic Figure; an Inch in Diameter at the Base, and about  $\frac{3}{4}$  of an Inch in height. In the middle of the Base is a round Flat about  $\frac{4}{10}$  of an Inch over, and somewhat raised above the rest of the Base. The whole Surface besides is very rough, being thick set with very small Pores, excepting certain smooth Ridges that run into one another, so as to constitute an elegant reticulated Work upon it. Found near *Rumford* in *Essex*. This somewhat resembles a sort of *Echinus* we meet with frequently in our Chalk-Pits; as that N<sup>o</sup> 247. does another; tho there's no reason to think they either of them owe their Form to a Shell.

c. 253. Another *Flint*, of much the same Colour. A great part of the Surface rises into Ridges, which are so disposed, that the whole not unaptly resembles the Surface of the Brain of some sorts of Fowls. Found in a Gravel-Pit in *St. George's-Fields*, *South-wark*. The Intervals, or those parts that lie betwixt the Ridges, are rough and porous, much as in the foregoing.

c. 254. A *Flint* of a Cylicndric Figure, only lessening a little toward each end. 'Tis three Inches long, and one Inch and a half in Diameter. There runs thro the whole length of it a cylindric Cavity, of about half an Inch in Diameter. The Surface without is of a whitish; that of the Cavity yellow. The Substance of it, where broken, is grey. Found in a Gravel-Pit near *Greenhithe*, *Kent*!

c. 255. Another of like Shape in all regards, but somewhat shorter. The exterior Surface of this is of a yellowish brown Colour; and the cylindric Cavity larger than that of the foregoing. Found in a Gravel on the back-side of *Golden-Square*.

c. 256. Another, little different in any respect, only 'tis considerably less than either of the former. Found in the same Pit with N<sup>o</sup> 255.

c. 257. A *Flint*, brown, with a Cast of Green. It consists of three round Stems or Branches concurring in the middle. There is a Hole at the Extremity of each Branch, passing on to the middle of the Stone, where all three Cavities communicate together. So that this Stone is no other than a triple-branch'd fistulous flinty Crust. Besides that, at the end, in the side of one of the Branches, which is somewhat longer than either of the rest, are two pretty large Holes opening into the Cavity of the Branch. Found, among Gravel, near *Marybone*, *Middlesex*.

c. 258. An orbicular grey *Flint*, about three quarters of an Inch in Diameter. In the middle of it is a spherical Cavity, lined with a cretaceous Matter. This was found in a Chalk-Pit near *Charlton*, in *Kent*. These flinty Shells are pretty frequently found. Their Cavities are sometimes empty, sometimes fill'd

with Chalk \*; and sometimes with a somewhat harder white Body †, which, if loose, so as to rattle when the Stone is shaken, is what the Antients call *Ἀετῖτης*. I have met with these several sorts in the Chalk-Pits of *Surrey, Kent, Essex, and Hertfordshire*, from the bigness of a Pea, to the Diameter of four Inches.

c. 259. An orbicular brown *Flint*, somewhat less than the former. There's a spheric Cavity in the middle of it; and a round Hole (naturally) from the Surface passing into that Cavity. *Islington*.

c. 263. A large piece of a concave flinty Ball. The Coat without is brownish, and very rough and uneven. The inside rises up into fine pellucid Bubbles not unlike those of Frog-spawn, of different Sizes. They indeed very much resemble the *botryoid Tubera* on the *Hamatites*. *Vid. Class 14. N<sup>o</sup>. 42.* Found in a Gravel-Pit on this side *Tatnum-Court*, along with N<sup>o</sup>. 7. *supra*. One of the Bubbles being broken, discovers a Texture within, very like that of the *Hamatites*; (*vid. Class 14. o. 42.*) and is in like manner striated too: but the *Stria* in this are extremely fine and small. 'Tis true, the Bubbles of the *Hamatites* are outwards, and upon the convex of them; and these of the *Flints* on the inside, and concave part: but that's a variety we see frequently happening to the very same sort of Matter. Witness the echinated crystalline Balls, on which the Crystals rise out of the Convex; and the concave crystalline Balls, where they are all on the concave part. Nay, both these are found in the same Place, or Ground, too. *Conf. c. 19. supra.*

c. 264. Another, little different, only the Bubbles are scarcely so clear, having in them a slight Tincture of Yellow. Found in a Gravel-Pit in *St. George's Fields*.

c. 265. Another Gravel-Pit in *Hyde-Park*. The Bubbles of this have their Surfaces glistening, and frosted over with extreme small crystal Sparks. There are Sparks very like these observable on some Samples of the *Hamatites*; particularly on one part of that *Class 14. o. 55.*

c. 266. A large black *Flint*, with a white Coat. Being broke in two, there appears in the middle of it an oval Cavity, two Inches in length, and an Inch and half a-cross. There passes a Cylinder of *Flint*, a quarter of an Inch in Diameter, through the whole length of the Cavity, and incorporates with the *Flint* at each end of that Cavity. And at one end of it arises a flinty String, of  $\frac{1}{16}$  of an Inch in thickness, which wreathing itself five times spirally about the Cylinder, is inserted into the *Flint* at the other end of the Cavity. The *Flint* constituting the Body of the

\* Bodies thus charged with other Matter are call'd *Γηώδες*, by Dioscorides, and other antient Naturalists.

† This the Antients call'd *Callimus*.

Stone, of the Cylinder, and the String about it, is all of the same Colour and Substance. The Inside of the Cavity is lined, and the Cylinder and String invested, with a white flinty Coat, frosted over, in all of them, with very fine small Sparks of Crythal. Out of a Chalk-Pit, by *Purfleet, Essex*.

c. 267. Another large grey *Flint*, with a like Cavity, and Cylinder passing long-ways of it. There's a like String also spirally wreathed about it, tho (in this) only three times. The Cavity, Cylinder, and String, are cover'd with a white Coat, frosted over with crystalline Sparks, but smaller and less conspicuous than in the foregoing. Found in a Field between *Cashalton* and *Bennington*, in *Surrey*.

c. 268. A yellowish brown *Flint*, near round, and about three Inches and a half in Diameter, the Surface somewhat tuberosè and uneven. In the middle is a Cavity, with a hard Body lying loose in it, and rattling when the Stone is shaken. This is a sort of *Ætites*, or *Eagle-stone*. *Kentish-Town*.

There's another *Ætites*, c. 299. *infra*. See also c. 306.

c. 269. A roundish *Flint*, outwardly brown; inwardly, as appears by a little Bit struck off, it is of a deep grey, near black. It is about two Inches in Diameter, and of the *Ætites* kind; discovering a *Callimus* in the middle of it when shaken. I found this on the plough'd Lands near *Marlborough*, in *Wiltshire*.

c. 270. A round *Flint*, about the bigness of a Walnut. 'Tis of a brown Colour, with a Cast of green. There's a pretty deep Furrow running in manner of a Zone round the middle of it; the Surface, on each side of the Zone, for a little space, being porous and uneven. Dr. *Prideaux* found this amongst the Gravel in the Walks of his Garden at *Norwich*. This also is an *Ætites*.

c. 271. Another, very round, and smooth. 'Tis of a pale brown Colour. The loose Stone within is very hard, as appears from the brisk Noise it makes when shaken. Mr. *Morton*. Found in - - - - *Hertfordshire*.

c. \*271. Another, a little different from the precedent; only less, and of a deep Colour, near black. Found near *Uxbridge*.

c. 272. A roundish *Flint*, of a very dark brown Colour. In the middle of it is a large Cavity, into which there pass two Holes from the Surface. In the said Cavity lies loose the Shell of some sort of Bivalve, larger than could be introduced in at either of those Holes. Taken out of a Cliff, near *Dover*.

c. 273. A blackish flinty *Peble*, in shape very much resembling a human Heart. The Basis has several *Foramina*, appearing not unlike the Cavities of the Blood-Vessels cut off at their Rise out of the Heart. 'Tis two Inches and a quarter in length. Found upon the Strand near the Pier at *Dover*.

c. 275. A small flinty *Peble*, which being broken, discovers a porous scabrous Nucleus in the middle of it, which is contain'd in a grey Crust, a quarter of an Inch in Thickness, and that involved in another of a yellow Colour,  $\frac{1}{20}$  of an Inch thick. The

Crusts including the Nucleus are of a close flinty Texture. Found in a Gravel-Pit in *St. George's-Fields, Southwark*.

c. 276. A *Pebble* about the bigness of a small Walnut, of a brownish yellow in most places; but where the outward Crust has been worn off, it appears of a very light yellow. It has some degree of Transparency; and in the whole resembles very much a piece of Amber. *Epping-Forest, near Lord Castlemain's House*.

c. 277. A *Flint* with some degree of Diaphaneity in all parts, but the middle of it is very diaphanous, with some small Spots of red. This is surrounded with a Crust of brown, set pretty thick with grey Spots. Found in *St. George's-Fields, Southwark*.

c. 278. An oval Plate cut off the foregoing, which takes a fine Polish.

c. 280. A Plate, cut off a flinty *Pebble* found near *Islington*. It takes a good Polish. There's a cellular Texture in this finely shewn; and 'tis a beautiful Stone.

c. 282. A Plate, cut off a *Flint* having some degree of Diaphaneity. The Ground of it is red, and thick set with Spots of yellow. Found in *St. George's Fields, Southwark*.

c. 283. A *Flint* cut into the Form of a Knife-haft. 'Tis partly diaphanous, and besides, shews a beautiful Mixture of Colours, being variegated with white, yellow, green, brown, red and purple. 'Tis very hard, bears a good Polish, and is as fair an Agate as is generally seen.

c. 285. A Plate cut off a flinty *Pebble* semi-pellucid, the middle part of it is grey, thick set with black Spots, and some few white. Round this are Streaks and Spots of red, white, and yellow, in a Ground of a lightish brown Colour, with a Blush of Green. Found in the Road to *Hamstead*, half a Mile on this side the Town.

c. 287. A Plate, cut off a flinty *Pebble*; the greater part of the Ground of a deep grey, approaching black, finely variegated with red, yellow, purple, and white.

c. 290. An oval Plate, cut off a flinty *Pebble*, variegated with grey, white, yellow, purple; with a good Polish. The Stone found in the Road near *Hamstead*.

c. 294. An oval Plate, cut off a flinty *Pebble* found on *Hamstead-Heath*. 'Tis finely variegated with white, purple, red, yellow, and brown; and takes an excellent Polish.

c. 295. Another, semi-pellucid; the Ground an horney grey, but having in some parts a Cast of Yellow. There are in it five or six white Streaks or Plumes, lying parallel to each other, and passing a-cross the Plate. The Polish is very good. The flinty *Pebble* off which it was cut, was found likewise on *Hamstead-Heath*.

c. 296. Another Plate very beautiful, and its Polish admirable. 'Tis variegated in a very lovely manner with white, red, purple, and yellow. From the same Heath.

c. 297.



c. 297. One half of a *Flint*, that was of a shape near orbicular. 'Tis hollow, and lined with Spar, shot into Crystals, pellucid, and very small. Without these is a flinty Crust of a pale brown Colour,  $\frac{3}{4}$  of an Inch in thickness; and, over all, another Crust, somewhat paler, and  $\frac{1}{8}$  of an Inch thick. The Body itself is two Inches and a half in Diameter. *Greenhythe*.

c. 298. A flinty *Pebble*, of a compress'd flat shape, almost triangular. The three Corners are of a pale yellow Colour; the rest of the Surface of a reddish brown. Found near *Hackney*.

c. 299. A *Flint*, of a light brown Colour, pretty round, on the Surface smooth, except that there are some small Cavities in it. It is about an Inch and half in Diameter. It is of the *Ætires* Kind, having a loose *Callimus* in it, which rattles and makes a noise upon shaking the Stone. Found near *Marybone, Middlesex*.

c. 300. A Pair of *Stones*, cut Diamond-wise, polished, and fit to set. They are transparent, clear, and of a good Water. They were cut both out of the same *Flint*; which was found near *Ashtburn*, in the *Peak*.

c. 301. A small oval Plate, cut off a flinty *Pebble*, and polished. The Politure is very good; and 'tis prettily variegated with a pale grey, blue, yellow, and purple. Found in the Gravel-Pit at the Top of the Hill, near the Town, on *Hamstead-Heath*.

c. 302. Another like Plate, with much the same Colours, but variegated in a different manner. The Stone found in the Road betwixt *Deptford* and *Southwark*.

c. 303. Another, with like Colours, only the Yellow is darker, with a Cast of Green. The Stone off which it was cut, was found along with the precedent.

c. 304. Seven and twenty flinty *Pebbles* cut into oval Figures, and polish'd. They are hardly so big as Pigeons Eggs. Several of them are of the *Agat* kind; and of a fine corneous, or semi-pellucid Grey. The rest are most curiously variegated with almost all sorts of Colours. They were found in several Parts, of *Surrey* and *Middlesex*, near *London*. The Design of preserving these, is to shew the inner Constitution of this sort of Stone, when thus cut, and laid open to view; and the Method and Process in the Formation of it.

c. 305. An oval Plate, cut off a flinty *Pebble*. Found on *Winchmore-Hill*, not far from *Southgate, Epping-Forest*. The Ground of this Plate is of a light grey Colour; but is spotted with a darker grey, and with black. One of the black Spots is long, slender, and, as the Lapidary fancies, resembles a Dagger, or Bayonet. Towards one end is seen a pretty Intermixture of red and yellow.

c. 306. A small round *Flint*, broken so as to shew 'tis compos'd of three Crusts or Spheres; the outermost white, the next corneous, and the innermost white. In the Center is a Cavity, in which is a Core of a grey Colour, affix'd on one side to the innermost Crust. Had this been loose, as they frequently are, it



would have shook; and then the Body would have been call'd an *Ætites*, of which sort it truly is. *Deptford.*

c. 307. A black *Flint*, cover'd with a white Crust, off which Flakes seem to have started in several parts of the Surface, most of which have left small Cavities, in figure of a Crescent or Half-Moon. Found, amongst several others that had like semilunar Cavities, near *Cambridge*.

c. 308. A small *Pebble*, yellow, with numerous small Specks of red. From the Shores near *Whitehaven*.

c. 309. Another, of a dusky red Colour, with small Specks of a brighter red. From the same Shores.

c. 310. A Plate cut off a flinty *Pebble*. Found on *Hamstead-Heath*, finely variegated with yellow, white, and red.

## CLASS IV.

### *Talc and Talky Bodies.*

#### PART I.

#### EXTRACT.

**A** Classical Distribution of the Talky Bodies according to their Figures, Textures, and Relations to each other. Part 1.

*Talc* differs from all other native Fossils in this, that it is flexible and elastic; and all Talky Bodies are so more or less, answerable to the greater or less Quantity of the *Talc* they have in them.

Part 1.

*Talc* in Ragstone, b. 70.

— in blue Slate, b. 80.

— in the Piped-waxen Vein,  
‡ d. 9.

*Talc* in Black-Lead, Part 1.

— in various other Fossils. See  
the Index of the first Part of  
this Class.

## CLASS IV.

### *Talc and Talky Bodies.*

#### PREFACE.

**T**HESE are either, 1<sup>st</sup>, Regular in their Texture and internal Constitution; but not in their exterior Figure. As, 1. The fibrous or filamentose Bodies, which are composed of parallel Threads.

2. The

2. The piped-waxen Vein, that is composed of parallel Tubules.  
 3. The Ludus Helmontii, which is composed of Talky Plates forming Cells, that are filled with stoney Matter. 4. Talc and the Micæ, which are composed of parallel Plates; all which Bodies have their exterior Surfaces irregular and uncertain. Or, 2dly, Regular, both in their internal Constitution, and in their external Figure: As, 1. The Selenites, which is composed of parallel Plates, and is externally of a Rhomboid Figure. 2. The Belemnites, which is composed of various Cortices including one another, and is externally of a Conoid Figure.

One Property Talc has that is peculiar; and in which it differs from all other Native Fossils: which is, that it is flexible and elastic, being disposed to bend; but return to its original streight Posture as soon as the Force that bends it is withdrawn. The same Property is observed in all Talky Bodies; but more or less, according as they contain more or less Talky Matter in them. The Plates of the Selenites, and Threads of the fibrous Bodies, Class 4. Part 2. bend much more easily than the Talky Spar; and the Septa of the Ludus Helmontii, the Pipes of the piped-waxen Vein, and the Cortices of the Belemnites, have so little Talc incorporated with the Spar that composes them, that it is no wonder they are not flexible.

Wadd or Black-Lead apparently holds a considerable Proportion of Talc in it; and the finer parts of it, when cut into thin Plates, or into Threads, bends, and is elastic. The Talky Sorts of Slate, such as that b. 80. supra, have likewise some small degree of Flexibility and Elasticity. This elastic Disposition discriminates the Talky Fossils from all others that are Native. Indeed there are none besides that are flexible, except only the Virgin Metals; and they are not elastic.

## CLASS IV. PART I.

### *The squamous or foliaceous Talc and Mica.* Conf. Class 4. P. I.

#### EXTRACT.

C. 1. The several Names given to these Bodies by Writers and others.

*Lapis Specularis*, Ising-Glass, or Muscovy-Glass, along with a black glossy Talc, in a sparry semi-pellucid Stone,  $\odot$  d. 1.

Talc like the Venetian,  $\odot$  d. \*7.

*Galaicos Argyrodamanti similis*, Plinii,  $\odot$  d. 27.

Wormseed-Stone, a Talky Body, related to the Porphyry Kind,  $\odot$  d. 36.

Granite,

Granite, like that from *Arabia*,  $\ominus d. 38. * 38. \dagger 38.$

Warming-stone,  $\ominus d. 7.$

Sulphur Earth,  $\ominus d. 41.$

Call,  $\ominus d. 45.$

*Mica argentea*, the white or silvery *Mica*; Glimmer, or Cat-Silver,  $\ominus d. 1. 2. 4. 9. 10. * 10. 29. 30. 31. \& seq. to 39.$

*Mica aurea*, the gilded or yellow *Mica*,  $\ominus d. 16. \& seq. 25. 42.$

*Mica grysea*, the grey *Mica*,  $\ominus d. 7. 28. 38. * 38. 43.$

*Mica nigra*, the black *Mica*,  $\ominus d. 11. 12. 13. 14. 15. 16. 22. 23. 25. 44. 45.$

### C. 2. *The various Bodies in which Talc is found.*

Talc in a saline Earth,  $g. * 3.$

Talc in Loam,  $a. 100.$

— in Sand,  $\dagger a. 7.$

— in Strata of Stone,  $b. 1. 31. 32. 60. \ominus d. 14. 38. 39.$

— in white Slate, or Flag,  $b. 85.$

— in Stone mix'd with Coal,  $g. 16.$

— in Marble,  $* b. 11. 19.$

— in Geodes,  $\dagger o. 10.$

— in the *Ludus Helmontii*,  $x d. 5.$

Talc in various other Fossils. See the Index of the general Reflections at the Head of this fourth Class.

*Mica argentea*, in Stone,  $\ominus d. 4. 5. 9. * 10. 31. 37.$

— together with Spar,  $\ominus d. * 7. 29. 44.$

— with Iron,  $\ominus d. 44.$

*Mica aurea* in Spar,  $\ominus d. 16. 17.$

— in a gritty friable Stone,  $\ominus d. 20.$

— in a hard Stone of a ferruginous Colour, and holding upon tryal, Sulphur, and Tin,  $\ominus d. 21.$

Black *Mica* in Spar,  $\ominus 11. 16. 22. 25.$

— in Stone and Spar,  $\ominus d. 14.$

— in Stone,  $\ominus d. 12.$

— mix'd with a white diaphanous Sand,  $\ominus d. 23.$

— suspected to hold Silver,  $\ominus d. 45.$

### C. 3. *Of the Uses of Talc.*

Talc reducible to an impalpable Powder, of use in casting of Metals,  $\ominus d. 14.$

Of the Medical and Chirurgical Uses of Talc.

Of the Mechanical Uses of Talc.

### C. 4. *Of the Composition of Talc; and of its Origin and Formation.*

Talc is, in specific Gravity, to Water, as  $2\frac{1}{2}$  to 1. It is flexible and elastic. In which it differs from all other Fossils; and, which

which is remarkable, somewhat approaches the Tenor of Animal and Vegetable Substances.

It ever concretes, and is form'd into Plates, or Flakes; in which likewise it agrees with *Wood, Shells, Bones*, and other vegetable and animal Substances.

The lesser Masses of it, that are lodg'd in Sparry, Stoney, and other like Bodies, dispersedly, from their shining and glimmering more than the other Parts of those Bodies, were an Inducement to the Writers of Fossils to give those Bodies the Name of *Mica*, and *Glimmer*.

These lesser Masses do not differ from those that are larger, that have the Plates of greater Extent, and are commonly call'd *Talc*, in Constitution, or any other Respect, except only in Bigness.

*Talc*, when homogeneous, pure, and free from extraneous Mixtures, is of a white, silvery, Glossy Complexion: and the Plates of it are generally plain, smooth, and pellucid. Such is the *Lapis Specularis*, or that sort that is call'd *Muscovy-Glass*.

As to the yellow *Talc*, the Tryals I have hitherto had opportunity of making, have not inform'd me to what that Colour is owing: whether to the Accession of Sulphur, or of some Metal.

The black and grey Colours arise from an extraneous Stoney or Mineral Matter, that is so intimately mix'd and incorporated with the *Talky*, as, being superior to it in Quantity, to give the form'd Mass not only a different Complexion, but even frequently a Tenor, Form, and Disposition, different from what the *Talky Matter* ever assumes, when pure and free from such Admixture.

The Masses of the purer *Talc*, particularly those which are incorporated with Sparry Matter, consist of several Plates or Flakes set, Face to Face, contiguous to each other, © *d. 1.*

The *Talky Flakes* in the Strata, were all form'd before the Subsidence: and settling down, along with the Sand, and other constituent Matter of the Strata, they became repositied amongst them. The Weight, Density, and Resistance of the Matter of those Strata is such, that the *Talky Flakes* could not have been form'd since the Compilation of the laxer Strata, *e. gr.* of *Earth, Sand, and Gravel*. And for those of *Stone, Slate*, and the like, their Solidity would be a still greater Obstacle to the Formation of the *Talky Plates* in them. Those Plates lie flatways, and parallel to the Site of the Strata, as all flat Bodies constantly do in the Strata: and indeed in the very manner that flat Bodies are wont to be repositied, as settling down from a Fluid, © *d. 1.*

The Flakes of the *Talc*, found incorporated with the Spar, and Vein-Stones, in the perpendicular Fissures, are accommodated to the Tenor of those Bodies. This was all repositied originally amongst the common constituent Matter of the Strata,

either in single Corpuscles, or Masses, so small as to pass the Interstices and Pores of the Stone; through which they, as indeed all the Matter now found in those Fissures \*, were drain'd, in Tract of Time, by the Water that is continually passing thither, in order to the Supply of Springs and Rivers.  
 @ d. 11.

C. 5. *The Places where the Talc and Micæ are found.*

- Hamstead-Heath, @ d. 10 \*.  
 Loving-Land, Suffolk, @ d. 17.  
 Oxendon, Northamptonshire, @ d. 4.  
 Weston, Northamptonshire, @ d. 28.  
 Crick, Northamptonshire, @ d. 24.  
 Buckland, Hertfordshire, @ d. 30.  
 - - - - Bedfordshire, @ d. 18.  
 Bullock's-Hill, Bedfordshire, @ d. 19.  
 Shores near Skegness, Lincolnshire, @ d. 3. 5. 12.  
 Near Hull, @ d. 8. 9. 10. 13.  
 Shores near Outhorn, Yorkshire, @ d. \* 1. 7. 11. 16. 22. 26.  
 Poul, Yorkshire, @ d. 25.  
 The Top of Pendle-Hill, @ d. 37. Lancashire.  
 Eden-Hall, Cumberland, @ d. 38.  
 Skrees, Cumberland, @ d. 38\*.  
 Kefwick, Cumberland, @ d. 43.  
 Northmoulton, Devonshire, @ d. 44.  
 - - - - Devonshire, @ d. 14.  
 Cornwall, @ d. 21.  
 Minhiat, Cornwall, @ d. 45.  
 River Palmer, @ d. 32. Cornwall.  
 St. Clear, Cornwall, @ d. 35.  
 Near Castock, Cornwall, @ d. 36.  
 Roach, Cornwall, @ d. 29.  
 Hinxton, Cornwall, @ d. 31. 39. 42.  
 Fersey Island, @ d. 20.  
 Newcastle upon Tyne, @ d. 27.  
 Hackness, Yorkshire, @ d. 23.

CLASS IV. PART I.

*The squamous foliaceous Talc and Mica.*

PREFACE.

Quæ Geo. Agricola Mica dicitur hæc Geo. Fabricio de Reb. Metall. p. 28. appellatur, "Sterile nitidum, album, nigrum, flavum."

\* Nat. Hist. of the Earth, Part IV. Conf. 4.



None, of these which follow, in this Catalogue, are in Form of Nodules, or invested with a Crust. There are several, found on the Shores, that have been worn and rounded by the Agitation of the Sea: and one, [○ d. 4.] found, among Gravel, in a Midland-Country, rounded by the Water of the Deluge departing. ○ d. 1. was out of a Vein, or perpendicular Fissure. Most of the rest were Parts of Strata.

### Talcum & Mica. [○ d.]

○ d. 1. Part of a large white sparry semipellucid Mass, found near Backwell in the Peak, containing, in several Parts of it, certain Masses of a white or silvery glossy Talc. Some of them are of a considerable Extent, the largest being an Inch and  $\frac{1}{4}$  in length, and an Inch broad. They easily split into thin transparent Lamina or Plates: and are of that sort of Body which is call'd by Pliny *Lapis specularis*, in the Shops *Ising-Glass*, and *Muscovy-Glass*. In one part, the Sparry and Talky Matter appear to be incorporated together, and equally mix'd. There are interpos'd in some parts of it, small, black, glossy Masses.

In this, and the Body ○ d. 30. the Plates of each distinct Mass lie parallel to one another: but the Masses themselves lie cross, and in Postures as different as may be. Whereas in Stone, Slate, and other Bodies that lie in Strata, the Talky Flakes lie parallel to the Surface of the Strata. Even those two Bodies ○ d. 10\*, and ○ d. 28. that were found, tho' amongst Gravel, yet lying parallel to the Site of the Strata, have the Talky Plates lying parallel to each other, and to the Surfaces of those Strata. And in those Masses that were found, beat off from the Strata upon the Shores, such as ○ d. 2, 5, 6. the Talky Plates are disposed in the same Method. The reason of which will appear very plain to any one that knows that *Pebbles* and *Flints* are of a cross-grain'd Constitution: and break irregularly, and uncertainly, *Conf. Pref. to Class 3.* Whereas the Stone of the Strata that has Talky Plates in it, breaks with a Grain, and parallel to those Plates.

○ d. 2. A Mass whitish, with a Cast of brown, thick set, in all parts, with small Spangles of Talc of the same sort with that of the precedent. From the Shores near Outhorn, Yorkshire. I have seen of the very same from the Shores of Humber, near Hull. This seems to be a sort of the Mica of *Agricola* \*. The Germans call it *Glimmer*, and *Catzilver*; the English, *Cat-silver*: and indeed *Mica Argentea* may not be an improper Name to distinguish it from the yellow sort, which the Mineralists call *Mica aurea*.

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\* In Bermanno, p. 696. "Quiddam candidum Scintillarum " modo in hoc lapide lucet.—Colore Argento simile fit."

⊙ *d. 3.* A Piece of a larger, little different. From the Sea-Shores betwixt *Skegness* and *Ingoldmills*, *Lincolnshire*. Mr. *Morton*.

⊙ *d. 4.* Another Mass of a coarser Grain, whitish, with Spots of a light Brown, and small Spangles of the *Silver Talc*. Found near *Oxenden* in *Northamptonshire*. Mr. *Morton*.

⊙ *d. 5.* A small oval grey Mass, very thick set with like Spangles, but somewhat larger. Found on the *Lincolnshire* Shores with N<sup>o</sup> 3.

⊙ *d. 6.* Another larger, otherwise a little different. From the same Shores.

⊙ *d. 7.* Another flat oval Stone, in which the *Talky Matter* consists of parts very small and fine, and is throughout incorporated with the grey Matter of the Stone. 'Tis thick set with small round ferruginous Bodies, standing out somewhat above the ordinary Surface of the Stone, being probably harder, and so having better sustain'd the Agitation of the Sea, which the Stone appears to have undergone. Still from the same Shores.

⊙ *d. 7\**. Another like Body, found along with the precedent. 'Tis cut and polish'd, to shew the interior Constitution of it.

⊙ *d. 7†.* A Piece of dark grey glossy *Talc*, with some white Spar interpos'd betwixt the Flakes of it. From - - - - - in *Yorkshire*, where it is in great plenty. 'Tis called there the *Warming-Stone*, they laying it in their Beds at their Feet in cold Weather. When once heated, it retains it a great while.

⊙\* *d. 7.* A flakey Mass, grey, with a Cast of Green; in which the *Talky Matter* makes the greatest part of the Mass: and is equally diffused and incorporated with the other Matter of it. This very much resembles what is sold in the Shops for *Venetian Talc*: and differs from the *Lapis specularis*, or *Muscovy-Glass*,

⊙ *d. 1.* only in this, that the Plates of that are flat and plain, whereas these are convoluted and inflected: that is homogeneous, pure, and uniform. This has a greenish mineral Matter incorporated with it; which is the case of several of the following.

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⊙ *d. 7.* Another, in which the Parts of the *Talc* are extremely small, but distinct, tho' inferior in Quantity to the rest of the Mass. *Outhorn Shores, Yorkshire*.

⊙ *d. 8.* Another, very small, otherwise not different from

⊙ *d. 7.* Found on the Shores of the River *Humber*, near *Hull*.

⊙ *d. 9.* A dusky brown Mass, with little Spangles of the silver *Talc* in it. From the same Shores of *Humber*.

⊙ *d. 10.* Another, of a light brown Colour, consisting of several Plates lying one upon another: and thick set with very small Flakes of the silver *Talc*. From the same Shores.

⊙ *d. 10\**. A Piece of a Gritty-Stone, of a deep red Colour, having in it very many Flakes of a white *Talc*, larger than those of the precedent. Found in the Gravel-Pit, near the *Bowling-Green* on *Hamstead-Heath*.

③. d. 11. A white sparry Mafs, thick fet with Grains of a black glossy Talk. Found upon the Shores near *Outhorn*, in *Yorkshire*. This sparry Mafs appears to have been beat out of a Vein of the Neighbouring Cliffs: and, tho' the talky Plates in it lie in something of a Method, yet not near so regularly as they do in the Strata. And they lie in much the same Manner in those ③. d. 25, 26, 31, 32, 33, 34, 35, 39, 40. Also in the Masses ③. d. 14, 15, 24, 29, \*38, 44. which were all out of the Veins, or Perpendicular Fissures.

③. d. 12. A Mafs, grey, and having throughout a very plentiful admixture of a black glossy Talc. From the Sea-Shores of *Lincolnshire*, between *Skegness* and *Ingoldmells*.

③. d. 13. Another, less, otherwise not much different. From the Shores of *Humber*, near *Hull*.

③. d. 14. A piece of Stone consisting partly of a Spar, white, with a Cast of red: and partly of a black glossy Talc. The Talc is very loose and brittle, the Flakes of it scaling off with the slightest force imaginable. 'Tis easily reducible into an extremely fine and impalpable Powder: And may fitly serve to keep any Metal that is cast, from sticking to the Mould. By reason of the Ponderousness of it, some have thought it contain'd metallick Matter in it; but, upon Tryal, that proves a mistake; nor is there any Metal in the same Pits where it is found; which are at . . . . . in *Devonshire*. There are several whole Strata of it lying from near the Day to a great Depth.

③. d. 15. Another piece, consisting entirely of the same black Talc, without any interposition of Spar. Found with the former.

③. d. 16. A whitish sparry Mafs, having in it many Spangles of a shining Gold-colour'd Talc, and some of a Black. This may not unfitly be call'd *Mica-Aurea*. Vid. N<sup>o</sup> 2. From the Shores near *Outhorn* in *Yorkshire*.

③. d. 17. A Mafs consisting chiefly of a yellow Talk, somewhat paler than the former. There are amongst it a few Grains of a whitish Spar: and on one side there adheres to it a pale brown hard Clay. From *Lovingland*, on the Coasts of *Suffolk*.

③. d. 18. A piece of fine Sand-Stone, having a large Proportion of a pale yellow Talc, in very small Spangles, throughout all parts of it, sent me, for Silver-Ore, from . . . . . in the Countess of *Kent's Estate* in *Bedfordshire*.

③. d. 19. A Mafs of yellow shining Talc, with a yellow earthy Matter mix'd with it. From *Pullock's-Hill*, near *Selsøe*, two Miles from *Amptill*, *Bedfordshire*.

③. d. 20. A gritty friable brown Stone, with small Spangles of a pale yellow Talc. From the Island of *Fersey*. Mr. *Southwell*.

③. d. 21. A very hard Stone, of a ferruginous Colour, in which is a considerable Number of Spangles of Talc of a Gold Colour. Upon tryal it yields some Sulphur, and a very little Tin. 'Tis found in vast Quantities, at . . . . . in *Cornwall*.

③. d. 22. A piece of a grey Mafs, compos'd partly of a white Spar, and partly of black Talky Spangles, in near an equal Proportion. Found about  $\frac{1}{4}$  of a Mile South of *Outhorn, Yorkshire*.

③. d. 23. A piece of a black glossy shining Talc, with some intermixture of a white diaphanous Sand. From *Hackness Shores, Yorkshire*.

③. d. 24. A Talky Mafs, from *Crick, Northamptonshire*. 'Tis of a Sandy Colour. The Talky parts break in Flakes, not unlike the *Lapis Judaicus*.

③. d. 25. A whitish sparry Mafs, with Spangles of a Black, and some few of Gold-colour'd Talc. This is little different from ③. d. 16. only that the Spar has a reddish Cast, and the Golden Micæ are fewer. Found near *Paul, in Yorkshire*.

③. d. 26. A Mafs made up of black, white, and reddish Grains of a Talky Spar. Found near *Outhorn, Yorkshire*.

③. d. 27. A Talky Mafs, grey, and flaky, with a very shining Silvery Gloss. There are in it small Knots, the biggest not exceeding the Size of a common Pea. Some of them of a deep red, others of a black Colour. From *Scarborough, Yorkshire*. It loses not the Gloss in Calcination, but burns to a Substance more approaching a Gold Colour: and is so very like Litharge, as not to be distinguished by Refiners, who have made many Tuns of that Commodity. Sent me by Dr. Cay, who supposes it to be the *Galaicos Argyrodamanti Similis*. *Plin. Nat. Hist. L. 37. C. 10.* From *Newcastle upon Tyne*.

③. d. 28. A grey Silver Mica, very thick set with small shining Spangles. *Weston Gravel-Pit, Northamptonshire*. Mr. Morton.

③. d. 29. Spar, white, and brown; with Plates of a fine white glossy Talc in it. *Roach, Cornwall*. It seems to have been taken out of a Vein.

③. d. 30. Part of a coarse, brittle, sparry Mafs, full of Flakes of Talc, very fair, white, with an Eye of yellow. *Buckland, near Royston, Hertfordshire*.

③. d. 31. *Mica argentea*. *Hinxton, Cornwall*.

③. d. 32. *Mica argentea*. This is in Appearance very much like the *Granite of Arabia*. See the Catalogue of the Exotic Fossils. Found in the River *Palmer, Cornwall*, near the Sea: and worn to an exact Round or Globose Form, by the Motion of the Water.

③. d. 33. *Mica argentea*, with a whitish Spar. Found in the same River.

③. d. 34. *Mica argentea*, in a Stone of a blackish Ground, spotted with light brown. *St. Cleer, Cornwall*. This sort is also found on *Rowtore*, in the same County.

③. d. 35. A Stone, porous, grey, with a Cast of Green. There are Plates of a white glossy Talc in it. Found in the River *Palmer, Cornwall*.

③. d. 36. A Stone, finely variegated with Spots of red and white; with extremely small Flakes of white Talc in it. Found on a great Hill near *Caslock*. 'Tis also not uncommonly found



in other Parts of *Cornwall*: and is called there, *Wormseed-Stone*; being thick set with small Bodies, not unlike the *Semen Santonici*, or *Wormseed*. 'Tis somewhat related to the *Porphyry-kind*.

Θ. d. 37. Brown Stone, with Spangles of the *Mica argentea* in it. From the top of *Pendle-Hill, Lancashire*.

Θ. d. 38. A Mass spotted with black and white, and having in it *Mica* of a grey Talc; very much resembling the *Granite* of *Arabia*. See the *Catal. of the Exotic Fossils, Part I. 2. 5.*— This was brought from *Eden-Hall, in Cumberland*, where 'tis found in vast Quantity.

Θ. d. \*38. A Mass, white, spotted with black, having grey *Mica* in it. This is exactly like the *Granite*. 'Tis found in Fissures in the *Skrees, Cumberland*.

Θ. d. †38. A Mass little different; only the Ground has a Cast of red. There are Fragments of it, of considerable Bulk lying near the *Skrees, Cumberland*.

Θ. d. 39. A gritty Stone, ponderous, of a dusky red Colour; with silver *Mica* in it, and small Bits of a white Crystallin Spar. This is not much different from the *Porphyry. Hinxton, Cornwall*.

Θ. d. 40. A *Mica*, white, with a Cast of yellow. *Loo-Beach, Cornwall*.

Θ. d. 41. Another, from ——— in the *Peak*; where 'tis call'd *Sulphur-Earth*.

Θ. d. 42. *Mica aurea. Hinxton, Cornwall*.

Θ. d. 43. A grey *Mica. Keswick, Cumberland*.

Θ. d. 44. A Mass, red, and ponderous; with white Spar intermixed, and Flakes of a black glossy Talc. From the Mine at *Northmoulton, Devonshire*. This seems to hold Iron. The Workmen there give this the Name of *Call*.

Θ. d. 45. A black glossy *Mica*. This is found in great Quantity at *Minhiniat, Cornwall*. About fifty Years ago 'twas judged to hold Silver, and work'd for that Mettal.

## CLASS IV. PART II.

### *Selenites Rhomboidalis.*

#### EXTRACT.

*Selenites*, found lodg'd in Sand-Stone. *b. 13.*

—— found in Clay. *a. 104, 105. d. 1. & seqq.*

—— found particularly in the Clay near the Wells of purging Waters at *Epsom, Dulwich, &c.* and therefore hath been supposed to impart the cathartic Property to those Waters: but erroneously; the *Selenites* being so far from being cathartic, that it is astringent. *d. 44. Append. d. 49.*



Clay in *Selenites*. *d.* 17. 33. 34. 54.

*Spar*, incorporated with the *Selenites*. *d.* 46.

*Marcasit*, incorporated with the *Selenites*. *d.* 46.

*Pyrites*, adhering to the *Selenites*. *d.* 31.

C. I. Of the *Rhomboidal Selenites* of *Steno Prodr.* p. 79.

## SECT. I. *With the Rhombs single or separate.*

The *Rhomboidal Selenites* is cautiously to be distinguish'd from the *Selenites* of Dr. *Scheuchzer*, (*Specimen Lithogr. Helvet.* p. 29.) and the *German Naturalists*; which is only a *Spar*: externally of no certain or regular Figure, but breaking into *Rhomboidal Masses*.

Whereas this is ever externally of a *Rhomboid Shape*: and is properly a *Nodule*. 'Tis indeed one of the most remarkable of all the figur'd ones. When entire, 'tis constantly uniform: and has no marks of Adhesion to any Solid. Consequently this Body was form'd in Water; in which 'twas wholly free during its Concretion, and not contiguous to any solid Body whatever. *d.* 1. & seqq.

'Tis frequently met with very small, and indeed of all sizes, from the Weight of a Grain, to that of a Pound, or thereabouts; but is ever of a *Rhomboidal Shape*, tho with some diversity.

Now the Body being constantly of the same Figure, of whatever Magnitude it happens to be, 'tis evident that every Advance, in the Formation of it successively from the very Initia and first Stamina, is in a *Rhomboidal Form*; the Process here being much the same as in the Crystallizations of the common Salts, *Vitriol*, *Alum*, and the rest; that are ever observ'd to be of near the same Figure, at what size soever a stop is put to the Progress of their Concretion.

The same is further evident, by a blueish Clay in *d.* 19. which, intervening whilst the Body was in the Act of Formation, and only about  $\frac{1}{3}$  of the Matter, that finally compos'd the whole, was concreted, distinguish'd and shew'd the Figure of the Surface of the Body when of but about  $\frac{1}{4}$  of the Dimensions that the whole at length attain'd to. And the Surface of this interior *Rhomboid* is exactly of the same Figure with that of the exterior: and every part of that at equal distance from this. The blueish Clay abovemention'd, appears plainly to be of like sort and Constitution with that of the Stratum wherein the Body lay. Indeed, in splitting and breaking the *Selenitæ*, found in several Places, I have commonly observ'd incorporated with them Particles of Clay no ways different from that of the Stratum, in which the *Selenitæ* were lodg'd, frequently very thick in great Numbers, and with such other Accidents, as clearly to indicate

indicate they were all form'd and finish'd before ever they were reposit'd there, or the Strata compil'd. In truth the Sea-Shells, of several sorts, that are commonly found lodged together with them, point forth the Deluge for the time of their Formation; when, as well as all other terrestrial Matter, that *Clay* was sustain'd in the Water, wherein these, and all other Nodules were form'd \*: and so it could not well be avoided but that some of it must intervene in the Concretion of the Selenites, and be inclosed in the Body of it. Considering the Circumstances of their Formation; 'tis rather a Wonder that so many of them are free, clear, and transparent, as we commonly find. In conclusion, the Selenitæ, Shells, and Clay, settling all down, compil'd the Stratum.

The *Rhomboid Selenites*, is compos'd of parallel Plates, transparent, very thin, flexil, elastic: and that are easily split, and parted from each other. The Plates are compos'd of streight parallel Fibres. *d. 1. 2.*

The Plates of this Body were anciently employ'd for the Lights of Windows: and, when Glasse came afterwards to be more commonly made, and generally to obtain, they cut it into Rhomboidal Panes, in Imitation of these Plates. *d. 18. Appen.*

## SECT. II. *The compos'd Rhomboid Selenites.*

The Conjunction of several Rhombs happen'd by their being in the Water, so near together, whilst in the Act of Formation, that they interfer'd, intrench'd upon each other: and so, of meer necessity, combin'd into the same Lump. *d. 20. & seqq.*

### C. 2. Of the Irregular *Selenites*.

This is of the same Nature and Constitution with the Rhomboid Selenites: from which it differs only in Figure.

It is form'd in Fissures of Stone, where 'twas confin'd, and had not Scope to crystallize and attain a Rhomboidal Figure. *d. 50.*

## CLASS IV. PART II.

### *Selenites Rhomboidalis.*

*d. 1.* The *Selenites Rhomboides* of Dr. Plot, (*Nat. Hist. Oxfordshire.*) found in the Place he mentions, viz. in *Heddington-Quarry*, in a vast Stratum of a dark blue *Clay*, that lies above the Strata of

\* *Vid. Nat. Hist. of the Earth, Part. IV. Conf. 3.*

Stone. This Body in length, measuring in a Diagonal, from the two extreme Angles, two Inches and  $\frac{6}{10}$ : in breadth, measuring from the two opposite Ridges of the longer Sides of the Rhomb, 'tis  $\frac{9}{10}$  of an Inch: in thickness, measuring from the two parallel Rhomboidal Planes, 'tis  $\frac{7}{10}$  of an Inch. These Bodies are soft, and easily split into Plates, parallel to the Rhomboidal Planes. This is very clear and diaphanous: and its Surface very polite. The Ridge that runs round the Sides of this Body is in all Parts equi-distant from the two Rhomboidal Planes: and consequently the eight Trapezia on its Sides are all of the same breadth.

d. 2. Another *Selenites Rhomboidalis*. This is nearly of the same size with the foregoing, but much thicker, the two opposite Rhomboidal Planes being  $\frac{9}{10}$  of an Inch distant from each other. 'Tis not so diaphanous as the former; several dusky Clouds shewing themselves in the Body of it. Nor is its Surface so polite as the Surface of that. 'Twas found in a *Clay-Pit* in a Lane in the Midway betwixt *Wotrup* and *Standford, Northamptonshire*. There are multitudes of them found in this *Clay*. Mr. *Morton*. The Trapezia in this are not so near of the same breadth as in the former. This consists of several Plates laid upon each other, all parallel to the Surface of the Rhomboidal Planes: and the Plates are made up of several Threads, laid all parallel to the shorter sides of the Rhomboid. They are very conspicuous all over the two Rhomboidal Planes, and the four shorter opposite Trapezia, *i. e.* those at the Ends of the Body: but not on the Sides, or the four opposite longer Trapezia. So that 'tis evident this Body consists entirely of Threads running across it, and all parallel to each other, and to the shortest sides of the Rhomboid.

d. 3. Another of the same Shape, but scarcely a quarter so big as that N<sup>o</sup> 2. The Threads of this run the quite contrary way to those of the other: being all parallel to the longer side of the Rhomboid. From the same *Clay-Pit*.

d. 4. Another, of near the same Size with N<sup>o</sup> 2. but not near so thick; the Threads running also the same way as in that. Only on one of the Rhomboidal Planes, for about the thickness of  $\frac{3}{4}$  of an Inch: at one of the acuter Angles, the Threads fall short, and do not reach home to the other side of the Body, by almost  $\frac{4}{10}$  of an Inch; by which means there's left a Cavity of a Rhomboidal Shape. From the same *Clay-Pit*.

d. 5. 6. 7. Three other Rhomboidal *Selenitæ*, having nothing peculiarly observable in them; only the Threads terminating abruptly before they arrive at the opposite side of the Rhomboid, make there a cavernous, abrupt, and irregular Surface. But from all 'tis apparent that these are constituted, and the Threads of which they consist, are dispos'd in the manner noted in N<sup>o</sup> 2. From the same *Clay-Pit*.

d. 8. 9. Two others, in which some of the Threads are abrupt, as in the four precedent: and some others are wholly wanting at one end of these: So that instead of the Ridge that parts two  
of

of the Trapezia in those, there appears a Furrow in these. From the same Clay-Pit.

d. 10. Another, having only this observable in it, that one of the Trapezia, on the longer side of the Rhomboid, is as broad again as the adjacent Trapezium. All the rest are nearly of the same breadth with each other, the Ridge parting them in the middle. From the same Clay-Pit.

d. 11. Another, of a more oblong and slender shape than any of the former. 'Tis one Inch and  $\frac{1}{2}$  in length from the two extreme Angles. One of the longer sides of one of the Rhomboidal Planes is  $\frac{9}{10}$  of an Inch in length, and  $\frac{3}{10}$  a-cross. The other opposite Rhomboidal Plane is something narrower, being but  $\frac{1}{4}$  of an Inch a-cross. Two of the lateral Trapezia are as broad; but the other two are not much above half that breadth. The Ridges in this rise but very little: So that the Body approaches pretty near a Parallelipiped. This was found in the great Clay-Pit near the Wells at *Richmond* in *Surry*. Upon the larger Rhomboidal Plane, appear four Lines, at near an equal distance from the Margins of the Plane, so as to describe a somewhat lesser, but like, Rhomboid upon it.

d. 12. Another, less than any of the former. The sides of the opposite Flats are near equal; being each about  $\frac{1}{2}$  an Inch: So that these Planes are, if not perfect Rhombs, yet approach very near that Figure. The Ridge on the Sides environs the Body in the middle: So that the Trapezia are all of equal breadth. Found in the Clay of *Heddington-Quarry*, *Confr.* N<sup>o</sup> 1.

d. 13. Another, little different from the foregoing, only somewhat less: and found too in the same Place.

d. 14. Another, much less, being but  $\frac{6}{10}$  of an Inch in length, measuring from the two extreme Angles. This is of an oblong Rhomboidal Shape, very like that N<sup>o</sup> 1. The Body is very diaphanous, and the whole Surface very smooth. The two opposite Rhomboidal Planes are of like Figure and Extent; and the Ridge environs the sides of the Body in the middle; so that 'tis a very exact, regular, and beautiful Stone. *Heddington-Quarry*. *Vid.* N<sup>o</sup> 1.

d. 15. Another, little different from the foregoing, only somewhat less. Found in the same Quarry.

d. 16. Twelve others, little different in Shape from the foregoing. Found in the Clay-Pit, betwixt *Wotrup* and *Standford*, along with N<sup>o</sup> 2. Six of these are nearly of the Size with that d. 14. the rest are less: two or three of them are indeed not above  $\frac{1}{4}$  of that bigness.

d. 17. Another about the Bigness and Figure of that N<sup>o</sup> 14. Being held to the Light, there appears in the Parts next the four Sides of the Body, four dusky blackish Clouds, the intermediate Parts being pellucid, and in form of a Cross, the Extremities terminating with the four Angles of the Body. Found in the same Pit with the precedent.

d. 18. Another, a little bigger, from still the same Pit. This has on one of the Flats, four whitish Lines, describing a Rhom-



boid, all equi-distant from the Margins of the Rhomboidal Plane. The Lines seem to pass the Body diametrically quite to the opposite Flat or Surface, where a like Rhomb appears.

d.\*18. One half of a very large Rhomboidal Selenites. 'Tis somewhat above five Inches long, or betwixt the two extreme Angles. In some Parts it is very clear and transparent: In others are thin Maculæ, of a grey Colour, and indeed of the same Colour with the Clay in which 'twas found. This is not different from the other half, which would easily split thorough the whole Body of the Stone, into thin Plates. This Selenites is of that sort and shape which was used anciently for Windows, when split in that manner, and framed together with Lead. In imitation of which, when Glass came afterwards into use, that was commonly cut into the same Form. This was dug up in a Tyle Clay-Pit in *Childrens-Field*, in the Parish of *Thurnham*, three Miles from *Maidstone, Kent*. Dr. *Harley*.

d. 19. A large Rhomboid Selenites, being two Inches and  $\frac{3}{4}$  from the two extreme Angles. 'Tis in Figure oblong, and very like that N<sup>o</sup> 1. In the middle of it appears another, exactly of the same Shape with the exterior; and having all its sides equally distant from those of the ambient. This central Rhomboid is one Inch and  $\frac{1}{2}$  in length, measuring in a diagonal to the two extreme Angles. Mr. *Bland*. Found in a Brick Clay-Pit, at *Kettering, Northamptonshire*. The Surface of the interior Rhomboid is distinguished by blue Clay that happened to apply there in the Progress of the Formation of the Body: and this, with what has been noted in the several precedent Bodies, shews plainly that the first Stamina are laid, and the whole Progress of the Formation, to the last made, in the same Rhomboidal Form.

d. 20. Another of near the same Shape, but less, being only two Inches in a diagonal from the two extreme Angles. Into the middle of one of the Trapeziums is infix'd a lesser Rhomboid is Selenites, passing into the Body of the larger. Near as much of it is immers'd or included in the Mass of the larger as is extant: and that End that is within, the larger being very pellucid, appears to be of the same Rhomboidal Figure with that without. *Heddington-Quarry*, in the Stratum of Clay. Vid. N<sup>o</sup> 1. The lesser of these Bodies must have been form'd before the larger: and with the space in which this was form'd; so that 'twas in the way of its Concretion: and there was not scope for it to complete its full Form. This affords us an Argument of the quiet State of the Fluid in which these Bodies were form'd.

d. 21. Another of the same Shape and Size, having three lesser infix'd into it. From the same Clay-Pit with N<sup>o</sup> 2.

d. 22. Another, with a lesser in like manner infix'd into it. This is split in a Section parallel to the Planes of the Rhomb. The exterior, in dividing, parts at the Surface of the infix'd lesser Rhomb, Whence 'tis evident that they are not continuous: and that



that the lesser included Body was formed before the larger. *Hed-  
dington-Quarry. Vide N° 1.*

d. 23. Another, of near the same Shape and Size with that N° 19. It has one pretty big, and three or four lesser Rhomboids, infix'd into the Trapeziums on each Side about the Middle of it. Found in the great Clay-Pit near *Richmond-Wells.*

d. 24. Another as large, from the same Pit. Each of the Trapeziums are as broad as the rhomboidal Planes: So that it is not so flat as the precedent generally are, its greatest Diameter being from one of the said Planes to the opposite; whereas the greatest Diameters of those are from the two opposite Ridges parting the lateral Trapeziums. There are ten or eleven lesser ones infix'd into the Middle of it.

d. 25. Another, not near so big, but of much the same compress'd Shape: and having seven or eight lesser ones infix'd into the Middle of it. From the same Pit at *Richmond.*

d. 26. Another, from the same Pit: and of the same Shape and Bigness with N° 25. having two lesser infix'd into it.

d. 27, 28. Two others, bigger, from the same Pit. They have a great many lesser ones infix'd in Clusters all round the Middle of them.

d. 29. Another *Rhomboidal Selenites* of a compress'd Form, having many others of like compress'd Form infix'd round the Middle of it. From the same Clay-Pit, near *Richmond-Wells.*

d. 30. Another, not so big, having a vast many little ones infix'd all round the Middle of it. From still the same Clay-Pit.

d. 31. A large flat Body, being 4 Inches in length, 3 in breadth, and  $1\frac{1}{8}$  in thickness. It is made up of 6 *Rhomboidal Selenites*. In the middle are two pretty long Rhomboids, seeming to cross each other at equally oblique Angles. In the two opposite Sinus's of the Cross, are two Rhomboids of the same Thickness with the cross ones, but shorter, adhering to each other, and to the cross ones in the same Plane. All of them are much chop'd and sulcated by their having lain for some time expos'd on the top of the Clay to the Weather, and perhaps to the Erosion of the vitriolick Matter that is pretty plentifully mix'd amongst the Clay, in which this was originally lodg'd. There adheres to it, in a Sinus, a Nodule of the Vitriolick Pyrites of about the bigness of a large Pea. Clay-Pit, near *Richmond-Wells.* The Chops and Clefts shew the Manner of the Grain, and Constitution of these Bodies.

d. 32. Two other *Rhomboidal Selenites*, placed cross-wise like the former. In the two opposite Sinus's, are two Bodies of like Thickness and Substance with the *Rhomboids*, adhering to them so as together to make up an oblong flat Body. Found at *Great Bowden in Leicestershire.* Mr. Bland.

d. 33. An oblong flat *Selenites*, 4 Inches and  $\frac{1}{2}$  in length, 1 in breadth, and  $\frac{1}{2}$  an Inch in thickness. The two opposite Sides rise into Ridges, like those of the *Rhomboidal Selenites*. And on one

Side, towards the End, a Part stands forth about  $\frac{2}{10}$  of an Inch, for about 1 Inch and  $\frac{1}{2}$  in length, terminating with an acute Angle, and appearing exactly like a Side of a *Rhomboidal Selenites*, jetting forth further than the rest of the Body. Indeed the Body seems to be composed of two Rows of oblong *Rhomboidal Selenites*, each joining to other at the Ends, and each Row being joined to the other at their Sides. For the Threads, that constitute it, run all obliquely in a Parallel, as those of the *Rhomboids* do; and meeting in the middle of the Body in obtuse Angles, just as several *Rhomboidal Selenites*, placed in the manner intimated above, would do. Through the Middle of it, for near the whole Length, runs a blackish, dusky, plumous Body, much like that delineated by Dr. Plot, *Oxfordsh. Tab. 2. Fig. 1. d.* sending forth, on each side, small Fibres obliquely, and indeed parallel to the Threads of the Body; being probably no other than some fine Parts of the blue Clay, either incorporated with it at its Formation, or insinuated since into it, the Body being of a Constitution so lax, that Ink will sink and insinuate into it, as the said Clay dissolved in Water might. 'Twas found in a Bed of a dusky blue Clay, in digging the Canal near the Earl of Montague's House at Boughton, in Northamptonshire. Mr. Morton.

d. 34. Another, little different from the preceding; only, as that has one, this has two Jets, over-against one another, on each side of the Body, forming acute Angles with it, and appearing as two *Rhomboidal Selenites* apply'd together in the manner intimated above. This has also a like plumous Body in the Middle, but finer, and somewhat less conspicuous than that of the former. Found in the Clay, over the Stone, in *Heddlington-Quarry*. Vide N<sup>o</sup> 1.

d. 35, 36. Another, somewhat broader, and split in two, to shew the interior Texture of it. One End of it terminates in an Angle exactly like that of the *Rhomboidal Selenites*. The Threads of it are placed obliquely and parallel: those of one Side meeting at a Line in the Middle of the Body at obtuse Angles, as in N<sup>o</sup> 33: *Heddlington-Quarry*, near Oxford. It parts into Plates, as the *Rhomboid Selenites* do: and is ridged on the Sides, as they are.

d. 37, 38, 39. Three others, broken, so as more plainly to exhibit the interior Texture and Composition of this sort of *Selenites*, which is suggested in N<sup>o</sup> 33. and the two following.

d. 40. Another oblong *Selenites*, much less than any of the foregoing. 'Tis flat, 1 Inch and  $\frac{1}{2}$  long, and  $\frac{1}{10}$  of an Inch broad. 'Tis ridged on each side, as the precedent are. *Heddlington-Quarry*.

d. 41. Another, of much the same Shape and Size with N<sup>o</sup> 40. From the Clay-Pit in which N<sup>o</sup> 2. was found.

d. 42. Another, from the same Pit, and of the same Shape, but a little less.

d. 43. Four like small oblong *Selenites*, all fix'd into the End of one somewhat larger. *Heddlington-Quarry*.

d. 44.

d.44. A flattish Body, somewhat concave, being composed of many *Selenite*, all small, but of different Sizes. As to their Shapes, they are all angular, and tending towards *Rhomboids*. They are placed in no Method or Order: being cemented promiscuously together, by a very small Quantity of a light-brown earthy Matter. This was part of a Ball, about the Bigness of a Man's Head. 'Twas hollow within, and lined with this Crust of *Selenites*. Without 'twas cover'd with a thin Crust of a pretty hard Substance, and a dusky grey Colour. 'Twas lodged in a Stratum of Clay of the same Colour, at the depth of about 16 Foot, and about 2 Foot above a Stratum of Stone. 'Twas found in sinking a Well at *Bowden*, in *Leicestershire*. Mr. *Bland*. There was nothing in the hollow of it, except a small Quantity of a loose Dust or Powder. They found only this Ball and another, which was of an oblong Form, and not so big as this was. N<sup>o</sup> 45. is a Piece of it.

d.\*44. A like flat Body, thicker than the precedent, composed of *Rhomboidal Selenite*, of several Sizes, very clear and fine. This was found in sinking the Purging-Well at *New-Cross*, near *Deptford*.

d.45. Another flat Piece of like sort; on the Outside of it is a grey Crust of a pretty hard Substance, about  $\frac{1}{12}$  of an Inch in thickness. Upon this are irregularly set many small *Selenite*; all of them, or for the most part, standing endwise. They are generally of the same Size, and of a compress'd rhomboid Shape, not unlike those of N<sup>o</sup> 29. *supra*, but much less. Confer. N<sup>o</sup> 44. *supra*.

d.\*45. Several like *Selenite*, separated: not so transparent as those of the precedent. Found, many Years ago, at the first sinking of the Purging-Well at *Acton*.

d.46. A pretty large Piece of a *Selenites*, seeming, by the Cast and Grain of it, to have a Sparry Matter mix'd with it. There are incorporated with it several Grains of a very bright yellow glittering *Marcasite*; the largest of them scarcely so big as a small Pea. Found in sinking a Well near *Nottingham*.

d.47. A flat Body, half a Foot in length, and 3 Inches broad, composed of several pretty large *Rhomboidal Selenite*, placed in one Plane in a double Row, except some few at one End of it, whose Position is irregular, one or two of them being prominent, and seeming to be infix'd transversely into the Body. Found in the great Clay-Pit near *Richmond-Wells*.

d.48. Another, from the same Place, much like the former, only somewhat less: and there are several *Rhomboidal Selenite* infix'd round the Middle of it; where it, being broken, discovers they all tend to the same Point in the Axis of the Body.

d.49. A Mass, consisting of several small *Rhomboidal Selenite*, placed irregularly and confusedly one by another. Found in digging the Well of Purging-Waters at *New-Cross*, near *Deptford*,

*Kent.* The *Selenites* being discover'd near this Well, the Purging-Springs by *Shooter's-Hill*, and those of *Streatham, Dulwich, Epsom, Richmond, Kenfington, and Acton*, has induced some unskilful Persons to believe, that these impart the Purging Power to those Waters. But the *Selenites* is found in those parts, as commonly where there are no such Waters: and indeed in equal plenty where-ever there is digging for common Wells, Brick or Tile-Clay, or other Occasions. This Body, by Calcination or otherwise, being to be reduced to a very fine and impalpable Powder, is fitted for being taken either inwardly or outwardly. But all our Tryals inform us, that its Properties are the same with common *Talc*, it being a pretty strong Exsiccant and Absorbent: and is very powerfully binding, instead of purging. More accurate Enquiries and Observations have taught us, that the purging Qualities of those Waters are owing to the vitriolic and other Salts; lying, along with numerous *Pyrita*, in the Strata through which those Waters drain and pass.

*d. 50.* A flat Body, near half an Inch thick, composed of small thin Plates, placed all edgeways, but irregularly, and terminating in the same Plane on the two opposite Surfaces. Found about 150 Foot deep, in a Fissure of Paving-Stone in the Isle of *Portland*. They are found both in the horizontal and perpendicular Fissures of the Stone. This appears to have fill'd the Fissure, and been contiguous to the Surface of the Stone in both sides. It seems to be of the same Constitution and Matter with the *Selenites*.

*d. 51.* Another flat Piece of the same sort, but thinner; several of the small Plates in this are placed not directly edgeways, but more obliquely than in the former. From the same Quarry.

*d. 52.* A Mass, made up of many very small *Selenites*, cemented together by a brown earthy Matter. They are angular; but of what particular Figure, is not easy to determine, because of their being impacted so thick and confusedly together. Out of a Lead-Mine, at *Workefworth* in the *Peak*. It lay near the Surface: and seems to have been left by the Water of the Deluge departing; by means of which it appears to have been tumbled thither from afar, worn, and smooth'd.

*d. 53.* A Piece of *Flaky, Fissil, Selenites*, in some Parts of a white, in others of a yellow brown Colour. Digged up near *Epsom-Wells, Surrey*.

*d. 54.* A *Rhomboidal Selenites*, with Clouds and Specks of blue Clay in the Body of it. From - - - - - in the *Peak*.

*d. 55.* A *Selenites*, 2 Inches and an half in Length, and  $\frac{3}{4}$  of an Inch in Diameter; having six Sides near equal, and terminating at each End in a trigonal Point. There are several lesser ones infix'd into it about the Middle of the Column: in much the same manner as in *d. 24. 27. & seqq.* This was found on the Top of the Moulds, an high Hill in *Arkendale, Yorkshire*.



## CLASS IV. PART III.

*Talky BODIES that are Fissil and easily disposed to split; being composed of Fibres, generally streight, and lying parallel to each other.*

## EXTRACT.

Gypsum, † d. 11.

English Talc, † d. 1. & seqq.

Asbestos or Amianthus † d. 8, 9,  
10, &c.

— Consists of transverse Fibres of a Talky Spar, in Veins like the Scepta of the *Ludus Helmontii*.

*Linum Asbestinum.* † d. 10\*.

*Of the Origin and Formation of the Asbestos & Linum Asbestinum.*  
† d. \* 10.

Asbestos with Marcasit affix'd. † d. 9.

Asbestos in the Fissures of Marble. † d. 10.

— in the Load-Stone. † d. 15.

English Talc, found in the Perpendicular Fissures of Stone, † d. 1. 2.

A Talky Body resembling Wood petrified, having in it several Veins, which seem to have been Cracks fill'd with Spar. Vid. † d. 40.

When broken, it emits a Sulphurous Smell. Found in a vast Stratum of Stone. † d. 5. 6.

A Talky Body found lodg'd in a Stratum of Gravel. † d. \* 7.

Gypsum & Selenites, in a Mass of Earthy Matter. † d. 13.

English Talc employed for the making Wicks for Lamps: and will burn very long without any sensible Consumption. † d. 1.

*Of the Mechanical Uses of Gypsum.*

## Talky Fibrous Bodies.

† d. 1. A Piece of a flat Body, very white, and shining, with some degree of Diaphaneity. 'Tis somewhat above two Inches thick: and is made up of several very fine Threads, laid exactly parallel to each other, and very closely united together. The two opposite flat Surfaces are somewhat rough: having a small Quantity of a reddish gritty Matter adhering to each. The Body seems to have been lodged in one of the Perpendicular Fissures of a Stratum of Stone to have fill'd it: and the Threads to have run horizontally a-crofs from side to side. This is commonly sold in our Druggists Shops, by the Name of *English Talc*. *Little-Leak, Leicestershire*. This Specimen is only part of one that was much larger



larger, flat, and having all the Threads laid a-crofs; fo that their Ends terminate in the two oppofite flat Surfaces. 'Twas of the fame thicknefs in all Parts of it. It fplits, in a Section parallel to the Threads, very eafily. A fmall Piece of it, a little bruifed, fo that the Threads part and open a little, ferves very well for a Wick to a Lamp, and gives a good Light. Suck a Wick will laft a great while. I kept one burning twelve Hours; when, extinguifhing the Flame, I found the Wick had fuffer'd no fenfible Confumption: nor was it any ways alter'd, only the Colour was changed to a pale brown. Mr. *Hunt* fays, great Quantities of this Body are found in Beds of Marl, about *Highley*, betwixt *Warrington* and *Knapton*, in *Cheshire*, in flat Lumps, lying horizontally. Thofe are ufually fomewhat thinner than this.

†d. 2. Another like flat Body, but fomewhat more pellucid. 'Tis near an Inch and  $\frac{1}{2}$  in Thicknefs: and the Threads groffer than thofe of the former. They run in like manner a-crofs from the one flat Surface to the other; but are intercepted by four Plates or Partitions, placed at near an equal Distance, and all parallel to the Surfaces of the Body. To one of the Surfaces adheres a pale-brown Stoney Matter: and that of the Partitions is of the fame Sort and Colour. This alfo feems to have been contained in a perpendicular Fiffure; near *Newbury*, in *Berkshire*. Major *Heron*.

†d. 3. Another, compofed of like parallel Semi-pellucid Threads with a Caft of Green. Found very plentifully - - - - - in *Bedfordshire*. Dr. *Allen*.

†d. 4. Another, confifting of like ftreight and parallel Threads, coarfer than thofe of N<sup>o</sup> 1. opake, and of an Afh-Colour. Found plentifully on *Knipe's-Scarr*, near *Lowther* in *Westmorland*.

†d. 5. Another, opake likewise, and of much the fame Colour with the foregoing. This is very large, being about feven Inches from flat to flat. 'Tis round, about five Inches  $\frac{1}{2}$  in Diameter, and fomewhat refembles a Piece of the Trunk of a Tree. The Workmen in thefe Quarries find this fort pretty frequently: and take it for petrify'd Wood. But that is an Error, as may be evinced from the difpofition of the Threads of it. For, tho' they lie, in moft parts of it parallel, yet there are fome that do not: but decline, into an oblique pofition, fo as to make acute Angles with the adjacent Filaments. This is of a Stoney Substance, a fine clofe Grain, pretty hard, and when broken emits a fulphurous Smell. There run thorough the Body of it feveral Veins of a Semi-pellucid Spar, that feem to have been originally Cracks \* in the Body till fill'd up with that fparry Matter. Found lodged in a vaft Stratum of Stone in the Quarry in *Portland*, at a confiderable Depth.

†d. 6. Another, little different, only lefs, from the fame Quarry. The Colour, Solidity, Texture, Sparry Veins, like thofe of the

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\* Conf. x d. 40. ‡ d. 10.

foregoing; tho' it has somewhat a nearer likeness to Wood, and, in one Part of it, is a resemblance of such a Knot, as is usual in Timber.

† d. 7. A Piece of another, from the same Quarry. This has some degree of Diaphancity. The Fibres of it are near streight, and parallel.

† d. \*7. A flat Piece of another, half an Inch thick. From a Gravel-Pit, near *Ashley, Northamptonshire*. Mr. *Sawyer*.

† d. 8. A Piece of a flat Body, something above  $\frac{1}{2}$  an Inch thick. There run a-crofs it many flexil parallel Threads, of a white Colour, with an Eye of Green. 'Tis a sort of *Asbestos* or *Amianthus*. From the Island of *Anglesey*. Mr. *Lhuyd*. Vid. *Philos. Transf.* N<sup>o</sup> 166. p. 823.

† d. 9. Another like Body, from the same Place. The Fibres or Threads of this have a somewhat stronger Cast of Green: and are intercepted in their Passage cross the Body, by three thin Plates set at near equal distance, and parallel to the Flats or two opposite Surfaces of the Body. On one of those Surfaces is affix'd a small Piece of a *Marcasite*.

† d. 10. A thin Vein of *Asbestos*; in Marble, as it seems, of a blackish Colour with a Cast of Green. In some Parts of it is a Body very like Spar, of a greenish Colour, with an Eye of Yellow. From still the same Place.

† d. \*10. Three Pieces of *Asbestos*, with a Quantity of the Threads or *Linum Asbestinum*. Also from *Anglesey*.

† d. 10\*. *Marble*, of a blackish grey Colour; with Spots, sparry, whitish with a Cast of green. 'Twas part of a very large Mass, of like Colour and Constitution; and broke off from a Stratum. The Mass was thick set with Veins of Spar, having a Talky Gloss, white with a Cast of green in some parts, in others with a Cast of yellow. The largest Veins were in Diameter about  $\frac{3}{4}$  of an Inch: the rest, thinner, of various Diameters; some so small, as to be just discernable. Those Veins are in Constitution exactly like the *Septa* of the *Lodus Helmontij*; and consist of various thin Plates, as those do. They are likewise striated a-crofs; and composed of transverse Fibres or Filaments. Some of these Fibres are inconceivably fine and flexible; and are what is commonly call'd *Linum Asbestinum*. Some few parts of the Veins consist of Spar that is not striated a-crofs. Those Veins appear manifestly to have been originally no other than Cracks, that were fill'd successively by Spar, drain'd, by Water, out of the Bodies of the Strata; which abound with Spar of like Completion. From *Anglesey*.

† d. 10 ⊖. Another Piece off the same Body, shewing the Veins and Plates very distinctly.

† d. 10 ++. Another Piece off still the same Body, with part of a Vein not striated a-crofs. The Spar, as usual, is whitish, with a Cast of green.

† d. 11. A flat Body much like † d. 1. only the Threads are not so fine. This is a sort of Gypsum. From ----- *Derbyshire*.

† *d.* 11 \*. Another. This is extremely white, glossy, and shining. Found in the Alabaster Pit, at *Chellaston, Derbyshire*.

† *d.* 12. A Mass in which the Gypsum is mixed confusedly with a reddish earthy Matter. In some parts of it are Veins of the Gypsum more pure, and composed of Threads like the foregoing. From the same place, with † *d.* 11.

† *d.* 13. Another, consisting chiefly of the red earthy Matter, but with some small Veins of the white thready Gypsum running thorough it, with some *Selenita* lodged in it. From still the same place.

† *d.* 14. A pretty large Piece of a Body of a very dark grey Colour, consisting of parallel Fibres running pretty streight the whole length of it. It was sent me by the Name of petrified Wood; and indeed it much resembles the Grain of Wood. 'Twas found on the Shores near *Lulworth*, nine Miles East of *Weymouth*.

† *d.* 15. A Mineral of a grey Colour with an Eye of green, only on one side it is of a pale brown. 'Tis composed of several Sheafs of grey Filaments, those of each Sheaf being generally parallel to each other, but the several Sheafs are variously laid, so that some of them lie cross one another. The Filaments appear like those of the *Lapis Asbestos*. 'Twas broke off from a piece of Loadstone of a dark ferruginous Colour, some Fragments of which still adhere unto it. From ----- *Devonshire*. Mr. *Stonestreet*.

† *d.* 16. A Body, white, glossy, and made up of Threads running cross-wise of it. 'Tis little different from that † *d.* 11. only that is flat, and smooth, on the two opposite Surfaces, as if it had fill'd a Fissure in Stone, and been contiguous to both sides of it. Whereas this is unequal, and jetting out into Crystallizations on one side; tho' plain, and seeming to have been contiguous, and adhered to the Stone on the other. *Artleburrow-Quarry, Northampton*. Mr. *Morton*.

## CLASS IV. PART IV.

*The Waxen-Vein, or Ludus Helmontij. Vide Preface infra.*

### EXTRACT.

INTRODUCTION. Of the various Names given to this Body by Authors. *Vide Preface infra.*

An Historical Account of the several particular Bodies in this Class; as also Observations upon each: with various Deductions from them. *Vide Preface infra.*

These recollected, and digested into a Method; in order to the setting forth the Natural History of this Body.

- C. i. The Places where this Body occurs. On the Sea Shores;  
 x d. 1. & seq. x d. 9. 11. 17. 18. 19.  
 In the Cliffs. x d. 1.  
 In Plains, at distance from Sea. x d. 28. & seq.  
 On high Hills. x d. 25. 30. 35. 40.
- C. ii. The several Parts of *England* where 'tis found. In the Isle  
 of *Grains*. x d. 19. In the Isle of *Sheppy*. x d. 1. & c. In the  
 Isle of *Thanet*. x d. 17, 18. *Sherburn*, Gloucestershire. x d. 7.  
 Shores of *Yorkshire*. x d. 9. *Oxendon*, Northamptonshire. x d.  
 10. *Hamstead-Heath*. x d. 10. *Harrow on the Hill*. x d. 10.  
*Richmond*, Surry. x d. 12. & seq. 30. & seq. *Masbam*, York-  
 shire. x d. 20. *Crick*, Northamptonshire. x d. 22. 23. *Cole-*  
*Ashley*, Northamptonshire, x d. 24. *Shooter's-Hill*, Kent. x d. 25.  
*Peckham*, Surrey. x d. 28. *Norwood* in Surrey. x d. 29. Near  
*Lamb's-Conduit*. x d. 34. *Epping-Forest*. x d. 37. *Mary-le-*  
*bon* in *Middlesex*. x d. 38. *Kilburn*, *Middlesex*. x d. 39. *Hol-*  
*loway*, near *Highgate*. x d. 38. *Highgate*. x d. 35. 40. 43. &  
 seq. North of *Grays-Inn*. x d. 41. *Pancras*. x d. 42. In the  
 Fields all along the North Side of *London*. x d. 52. *Low-*  
*Eastoft* in *Suffolk*. x d. 53. In *London*. x d. 55.
- C. iii. In what sort of terrestrial Matter 'tis lodg'd. In the Strata  
 of Earth, that constitute the Cliffs by the Sea, x d. & seq.  
 In Strata of Clay, x d. 26. & seq.
- C. iv. At what Depths in the Earth it has been observ'd, x d. 43.
- C. v. Of the Number and Frequency of the *Ludus Helmontij*,  
 x d. 30.
- C. vi. Its Posture in the Earth, flat-ways, and parallel to the  
 Site of the Stratum in which 'twas repositd, x d. 1. & 43.
- C. vii. Of the various Magnitudes of the *Ludus Helmontij*, x d. 25.  
 28. 30. 43. 51. 52.
- C. viii. Of the exterior Form of this Body.
- §. 1. 'Tis a Nodule, and found ever loose and independent, x d.  
 25. & alibi passim.
- §. 2. Of a broad, flat, or compressed Shape, and commonly ap-  
 proaching round. x d. 1. 28. 38. 43. 52. 53.
- §. 3. Generally somewhat lessening, or growing thinner to-  
 wards the Margin, all round. x d. 52. & seq.
- APPENDIX. 1. 'Tis sometimes found naked and uncover'd, vide  
 x d. 1.
2. But is most commonly surrounded and invested with a sto-  
 ney Crust. x d. 25. 26. 28. 30. 41. & seq. 51. 52.
3. Some Instances there are of this Body composed of various  
 Crusts, including one another, like those of the *Bezoar Mi-*  
*nerale*. x d. 42. vide 40. 20.
- C. ix. Of the interior Frame and Composition of the *Ludus Hel-*  
*montij*.



- §. 1. It consists chiefly of a lapideous Matter. *x d. 1. & seq. Conf. c. 11. infra.*
- §. 2. That Matter is intercepted and divided into Tali. *x d. 1. & seq.*
- §. 3. This is done sometimes by Cracks and Fissures variously passing the Body. *x d. 34. 38. 51.*
- §. 4. But generally by means of certain talky Septa or Partitions. *x d. 1. & seq.*
- C. x. Of the Figure of the Tali.  
They are in shape of a Column, with 3, or 4, but most commonly 5 Sides. *x d. 1. 3. 17.*
- C. xi. Of the Magnitude of the Tali. *x d. 1. 17.*
- C. xii. Of the Texture and Constitution of the Tali, or the main and common constituent Matter of this Body. *Conf. C. ix. § 1. supra.*
- § 1. The Tali are composed sometimes of a ferruginous or ochreous Matter, *x d. 17. 18. 19. 28.*
- § 2. But most commonly of a close stoney Matter, of a grey Colour. *x d. 7. 22. 41. 52. 53.*
- of a foliomort Colour. *x d. 1, &c.*
- of a Rust Colour. *x d. 42.*
- of an Iron Colour. *x d. 35.*
- of a light Brown. *x d. 1. 6. 12. 17. 20. 28.*
- of a dark Brown. *x d. 5. 10. 13. 25. 52.*
- dark Brown, with a Blush of Purple. *x d. 29.*
- Brown outwardly, and grey within. *x d. 30.*
- variegated with Brown and Grey. *x d. 11. 13. 51.*
- APPEND. 1. Several Particulars in the Constitution of Tali discover'd by the Assistance of Microscopes. *Vide Preface infra.*
2. Of the specific Gravity of the Tali, of the several sorts of this Body. *V. ibid.*
3. Chymical Experiments and Tryals with several Menstrua, in order to discover the Nature of all the different Kinds of this Body. *V. ibid.*
4. Tryals of the several sorts of this Body by Fire. *V. ibid.*
5. Of the medicinal Powers and Properties of this Body. *V. ibid.*
- C. xiii. Of other extraneous Bodies, or Matter, intermixt or incorporated with the common constituent Matter of the Tali.
- |                                    |   |
|------------------------------------|---|
| § 1. Yellow Ochre. <i>x d. 28.</i> | § 5. Marcasit. <i>x d. 11. &amp; seq.</i> |
| § 2. Crystall. <i>x d. 4.</i>      | § 6. Iron. <i>x d. 25. 29. 0. 105.</i>    |
| § 3. Talc. <i>x d. 5.</i>          | § 7. Pipid-Waxen Vein. <i>x d. 11.</i>    |
| § 4. Salts. <i>x d. 25. 30.</i>    | § 8. Various Sea-Shells. <i>x d. 10.</i>  |
|                                    | 25. 27. 30. 40.                           |



- C. xiv. Of the exterior Crust with which this Body is frequently found invested. *x d. 52. Conf. C. viii. Append. 2.*
- C. xv. Of the Septa, or Partitions, that parcel out this Body into various Masses or Tali. *x d. 1. & seq.*
- § 1. They are compos'd sometimes of an ochreous Matter. *x. d. 17. 18.*
- § 2. But most commonly of a talky Spar. *x. d. 10. 16. 20. 23. 40. 53.*
- § 3. The various Thickness of the Septa. *x d. 1.*
- § 4. In those Bodies that are invested with a Crust, the Septa lessen and grow thinner as they approach the Crust, terminate there, and rarely pass thorough it. *x d. 5. 28. 32. 37. & seq. 51. 52.*
- § 5. The Septa are compos'd of thin Plates standing edgeways, and generally parallel, and consisting of transverse Fibres, so that the whole appears to be striated cross-ways. *x d. 1. 22. 25. 28. 30. 35. 36. 43. 45. 46. 51.*
- § 6. The Plates, tho' generally contiguous, are sometimes divaricated, and stand at some Distance from one another, so as to leave room in the Intervals for Spar to shoot, which it does into small Crystals. *x. d. 13. 24. 36. 37. 55.*
- APPEND. I. Those Crystals are sometimes finely colour'd. *x d. 33. 34. 36.*
2. Stellar Efflorescencys form'd also in the said Intervals. *x d. 16. Of the starred Waxen-Vein. ibid.*
3. Efflorescencys and Crystallizations of *Marcasit*, upon the sparry Plates, form'd in those Intervals. *x d. 12. & seq.*
4. A Plate of *Marcasit*, interpos'd betwixt the sparry Plates, in one of those Intervals. *x d. 11.*
- C. xvi. Instances of some few sparry Partitions that intercept and pass thorough others. *x d. 47.*
- C. xvii. The Cracks and Partitions divide and pass the Sea-Shells, lodg'd in it, as well as the Stone itself. *x d. 25. 28. 40.*
- C. xviii. *Dendrite*, or fuliginous mineral Delineations of Shrubs, in the *Ludus Helmontij*. *x d. 28. 40.*
- C. xix. Of the Origin and Formation of the *Ludus Helmontij*.

ARTIC. I. *Reflections.*

- § 1. Upon the Bigness of this Body. *Conf. C. vii. supra.*
- § 2. Upon its being in Form of a Nodule, loose and independent. *Conf. C. viii. supra.*
- § 3. Upon its lying flat-ways, and parallel to the Site of the Strata, in the very Manner that all Bodies of like Form settling down from a Fluid are wont to lie. *x d. 43. Conf. C. vi. supra.*
- § 4. Upon the various Shells and marine Bodies included in it, and incorporated with the Mass of it. *Conf. C. xiii. §. 8. supra.*

- § 5. Upon the Cracks in this Body. *Conf. C. ix. § 3. supra.*  
 § 6. Upon the Constitution of the Partitions. *Conf. C. ix. § 4. & C. xv. § 1. & seq.*  
 § 7. Upon their growing gradually less, as they approach the Crust. *x d. 40. Conf. C. xv. §. 3.*  
 § 8. Upon their Crystallizations, & Efflorescencys. *Conf. C. xv. § 5. Append. 1. 2. supra.*  
 § 9. Upon the Partitions passing the Bodies of the Sea-Shells dividing and parting of them. *x d. 40. Conf. C. xvii. supra.*  
 § 10. Upon those Partitions that divide and intercept others. *x d. 47. & seq.*

'ARTIC. II. *Deductions. Conf. Natural Hist. of the Earth.*  
 Part IV. *Conf. 2. 3.*

1. The main and common Mass of this Body concreted, and was form'd in Water. *x d. 43.*
2. In which it was sustain'd, along with Sea-Shells, and other like Bodies. *x d. 43.*
3. This was at the Time of the universal Deluge. *x d. 43.*
4. Upon the Retreat of the Water, it settled down along with the Clay, Earth, and other like Matter that form'd the Strata in which it was lodg'd. *x d. 43.*
5. It was, at its first Settlement, uniform and solid. *x d. 40.*
6. The Cracks in it were form'd afterwards. *x d. 40. 47. Conf. + d. 5.*
7. The Cracks and Breaches of the same Body, were made chiefly at the same time. *x d. 47.*
8. But some few Instances there are of Cracks made after that Time. *x d. 47.*
9. As the Water in which the *Ludus Helmontij* was form'd at the Deluge, *Conf. C. xix. Art. 11. 1. 2. 3. supra.* where-with the Pores and Interstices of the Body were saturated, during the Coalition of the Matter that compos'd it, gradually quitted it, and got forth, the said Matter was contracted, and shrunk up in divers Directions, and with a Tendency towards divers Axes in the Body; by which means the Cracks were affected, and the Mass parted into Segments or Tali. *x d. 25. 40.*
10. The Cracks both of the Stone and Shells, were, generally, in tract of Time, gradually filled by Spar; the Water which is continually pervading the Strata deriving thence loose Particles of that Mineral, introducing them into the Cracks, and affixing of them there, so as thereby to form the Plates and Partitions. *x d. 40. 45.*
11. The sparry Partitions that are continued thorough, and intercept other sparry Partitions, are of a second Order, and were form'd since those others were. *x d. 47.*

# The Waxen Vein: or Ludus Helmontij.

## P R E F A C E.

**T**HE Body I am here about to exhibit is commonly called in England the Waxen-Vein. That Name, like many others, is not so apposite that one may imagine that they who gave it, made use of much Thought or Reflection. The Spar of some of the Veins, or Septa, particularly in those of Sheppy Island, is of a yellowish Colour, and somewhat resembles melted Wax; which perhaps was the only Reason they had to give it that Name. Indeed Dr. Grew (*Mus. Reg. Soc. p. 311*) seems to imply as much. He supposes the Waxen-Vein to be the same with the Ludus of Paracelsus and Van Helmont. Dr. Plot (*Nat. Hist. Staffordshire, c. 5. §. 23.*) is of another Opinion: and takes that Ludus to be a tessellated Pyrites. Of which sort he notes, out of Wormius, there are, at Osterdale, in Norway. Wormius reckons this among the Copper-Ores: (*Museum, p. 121.*) and 'tis certain some of these Pyrites hold some small Portion of Copper, as others do of Iron. That Author, (*ib. Mus. Worm. p. 39.*) speaking of a like tessellated Body, found upon the Banks of the River Scald, near Antwerp, judges it the same with the Ludus Helmontij & Paracelsi. He calls this Body Silex: and Dr. Grew pronounces him mistaken in reckoning it among Flints. (*Mus. Reg. Soc. p. 312.*) But in truth the Doctor himself is mistaken in thinking the Danish, German, and other Writers of Fossils restrain the Name Silex, to what we call here in England, Flint; they applying that Name to very various Bodies: and Wormius particularly refers the Pyrites to the Silex-kind, because it strikes Fire. He adds, (*Mus. Worm. p. 39.*) that Fr. Merc. Van Helmont, the Son of the famous Chymist, J. B. Van Helmont, produced a Stone, as the Ludus of his Father, that was very different from the tessellated Pyrites. His description of it is obscure: but it seems to have been of the same sort with that exhibited in this Class. I my self have a Stone (See the Catalogue of the Foreign Fossils, Vol. 1. N<sup>o</sup> 1.) that was brought over, from Antwerp, into England, by Fr. Merc. Van Helmont, as his Father's Ludus, that is truly of this kind; but both the Tali, and Septa, are of a more dusky, or, as Wormius expresses it, of a more fuliginous Colour, than ours in England commonly are: Wormius suspects this Testimony of the Son. For my own Part, I shall not enter into the Controversy, but content my self to give J. B. Van Helmont's Sense in his own Words.—*Neque enim Ludus Paracelsi parat Lixivium: sed silem ex acido amarum. (De Lithiasi. c. iii. §. 28. p. 672.) Quapropter suum Ludum, Fel terræ vocat. Est enim Lapis Siliceus, tenerior tamen, & qui ferè totus per diuturnum bidui ignem avolat; cum sale petreæ vero, multò celerius. (ib. c. vii.*

§. 22. p. 699.) *And again, — Ludus semper tali, tesserae aut cubi forma eruitur. Paracelsus represents this Body as capable of dissolving the Stone in the Kidneys and Bladder: and Van Helmont proceeds here to give that Chymist's Method of preparing of it. Afterwards he expressly distinguishes this from the Pyrites: and indeed seems manifestly to design a Body of the very sort with that set forth in this Class, having the Tali of a pale or grey Colour, and the Crusts or Septa, in the Commissures betwixt the Tali, Sparry, and in some measure pellucid. This he found also in a Stratum of Brick-Clay: as we commonly do ours in England. (x ib. p. 700.) His Words are — Reperi autem illud ad ripam Scaldis prope Antwerpiam, ubi lateres coquuntur: Situsque est plus minusve 40 pedes subter horizontem, — in agro vicino, — per aliquot milliaria. — Est & prædicto agro Pyrites frequens, sulphure dives atque vitriolo. Qui etsi sub terra prædurus sit, mox tamen sub aura sit friabilis, fatiscente scilicet sensim vitriolo. Sed Ludus, lapis est pallefcens, subinde Crustâ perspicua per Commissuras obductus, magna sui parte, in clibano figulino volatilis. Hic nempe est Lapis, Saxifragorum apex, & Calculosorum desiderium.*

*That Stone which B. Ambrosinus calls Marmor figuris Mathematicis naturaliter exaratum, Aldrovand. Mus. Metall. p. 768. appears, by his Icon, to be of the sort set forth in this Class.*

P. S. Since that above was wrote, Sir I. Newton gave me a Piece of this kind of Body brought over from Germany by the younger Helmont, as the true Ludus of his Father; which does not differ, either as to the Constitution of the Body of the Stone, or the Septa, from those commonly found in England. The Tali are also of a grey Colour: as ours here commonly are. See the 1st Vol. of the Catalogue of the Foreign Fossils. So that there can be no doubt but the Body exhibited in this Class is the very same that J. B. Van Helmont design'd by the Name of Ludus. But then he was greatly mistaken in supposing this to be the Ludus of Paracelsus. The Chymists, and Mineralists of Germany, who are very curious in these Things, and very exact in their Notices and Traditions concerning them, all agree that the Ludus Paracelsi is the tessellated Pyrites. And Sir Isaac Newton had this very Body sent from Saxony as Paracelsus's Ludus; of which he gave me a Specimen, which I have exhibited, amongst several others, in the 1st Vol. of the Catalogue of Foreign Fossils. N<sup>o</sup> 2. But yet Van Helmont, imagining it to be the same, positively ascribes to this the very Powers and Vertues that Paracelsus does to his: and particularly that very extraordinary Power of dissolving the Stone in Humane Bodies. Which is but one of many Instances of the Fondness and Credulity of the Gentlemen of that Study. 'Twas not a very wild Name, Ludus, to be given, to a Dye, or Talus lusorius; considering how humorous a Writer Paracelsus was.

*I have rarely observed the Ludus Helmontij lodged shallower than within four Foot of the Surface, or deeper than about fifty. 'Tis pro-*



*probable it may be found to a greater Depth; but I, having observ'd it only in Pits wrought for Tile and Brick-Clay; and in the Cliffs on the Sea-shores, but never in Mines, nor where there is sinking to a more considerable Depth, have had no Opportunity of making Observations deeper (§). See also the Register of the Chymical Experiments and Tryals, with several Menstrua: as also the Tryals in the Fire.*

### *The Waxen-Vein, or Ludus Helmontij.*

x d 1. A Stone, consisting of 28 Tali, distinguished each from other, by means of certain Septa or Partitions. The Tali are oblong: and some of them have four, but the greater Part five sides, which are very rarely equal. They are of different Sizes; some of them being as big again as others. The largest are about two Inches in Diameter. The Body that they, together with the Septa, compose, is near flat; being about the thickness of two Inches; which consequently is the length of the Tali, they standing transverse, and passing directly a-cross the Body. Tho' the sides of the Tali be unequal, yet they are so fitted and placed by each other, as not ordinarily to leave any void Space. They are all made up of a very compact sort of Stone, of a fine Grain, and a light brown Colour. The Partitions pass quite thorough the Body of the Stone; the Edges of them appearing on each of the opposite flats; where they form a sort of Net-Work. This makes a very beautiful Variegation of the Stone; the Septa being of a yellowish Colour, and the Tali brown. Indeed each Talus is environ'd with a Crust or Case; which, conforming it self to the Sides or Planes of the Talus, is of a Figure quinquangular, or quadrangular, answerable to that of the Talus which it happens to cover. The Cases, where they join and are contiguous to one another, form the Septa or Partitions. These consequently are double every where in the middle of the Stone, and on the insides of the Tali: but on the outside of those that stand outmost and compose the Rim or Margin of the Stone, they are single, and in Form of a Crust; which is of a pale yellow Colour. These Cases are composed of several parallel Plates, set one within another, and striated a-cross. They are compos'd of a talky Spar. Each Case is about  $\frac{1}{12}$  of an Inch in Diameter: and consequently each Partition about  $\frac{1}{8}$ . This very elegant and extraordinary Body was found loose upon the Shores betwixt the Minster and Warden in the Isle of *Sheppy, Kent*. There were many other like Bodies lying scattered upon those Shores for a Mile or two together; which were generally broken, worn and fretted by the Motion and Agitation of the Sea; of which there are plain Indications upon this here treated of. They are all lodged originally in Beds of Clay in the adjacent Cliffs, whence they are beaten down by the Insults



of the Sea in Storms and high Tides. I observed several lying in those Cliffs: and caused some of them to be taken forth. They lay all flat-wise, or in an horizontal Posture. They were of several Sizes. The least I took notice of, was not above two Inches in breadth: the largest about two Foot and a half broad, four Inches and a half thick, and pretty near round. Viewing several of those that appear'd in the Brow of the Cliffs, and were actually lying in the Strata, entire, unworn, and in their native and original State, I found the Ends of the Tali naked, and that they did not differ considerably from those that lay loose on the Shores; nor could I find one of these Bodies here invested with an exterior stony Crust, as those found near this City commonly are. The most regular of these Bodies I ever saw, was at my return to Town, after my Travels thorough *England*, in the Collection of Mr. *Conyers*; what is become of it now, I cannot tell. This was flat, about a Foot and a half broad, three Inches thick, and near round. The Tali were almost all of near the same Size: and their Sides near equal. The Stone that constituted them was very close and hard, of a Folio-mort Colour: and the Partitions and Crusts of a dusky Yellow. This also was found somewhere upon the Shores of the Isle of *Sheppy*.

*xd. 2.* Another, little different, only less, and composed of fewer Tali. Found on the same Shores. Part of this is polish'd.

*xd. 7. 2.* Another. *Ibid.*

*xd. 3.* A single pentagonal Talus, consisting of the same sort of Stone with that of the two foregoing: and cover'd on all the five sides with a yellow Crust. 'Tis two Inches and  $\frac{3}{4}$  in length, and about one Inch and  $\frac{1}{4}$  in Diameter. Found on the same Shores.

*xd. 4.* Two Tali, one of them Quadrangular, the other Quinquangular, consisting of the same sort of Stone with the former, having in it small Sparks of Crystal. Each is invested with its proper Crust: yellow, and like that of the foregoing. Found on the same Shores.

*xd. 5.* A piece of a *Ludus Helmontij* near Square, worn and ground by the Agitation of the Sea. On one side of this Body, two of the Partitions, crossing it in the middle, divide it into four near equal Parts. 'Tis observable that some of the Partitions do not quite pass the Body: and those that do are so thin as to appear only like a small white Line on the opposite side of the Stone. In the Mass of the Tali, appear some small Flakes of Talc. From the same Shores.

*xd. 6.* Another piece, of an oblong form, worn in like manner: and divided on one side, by the Partitions intersecting in the Umbilicus of it at near right Angles, into four Parts. On the other side 'tis cover'd by a Crust. The Stone of the Tali is, in this, of a somewhat lighter brown Colour than any of the former. From the same Shores.

*xd. 7.*

x d. 7. Another *Ludus Helmontij*. In this the Tali are smaller than those of any of the foregoing, of a grey Colour, and the Stone softer. Found in a blue Clay in a Lane on the West side of *Sherborn* in *Gloucestershire*, going down the Hill to the River. 'Tis of a compress'd oval Form, two Inches long, and one and a half broad.

x d. 9. Another piece of a rust Colour. The Partitions of this do not every where pass the Body of the Stone, so as to part the Tali, as in the former. 'Tis worn by the Working of the Sea: and was found upon the Shores near *Burlington* in *Yorkshire*, where they are very plentiful. This sort is indeed found all along the Shores of this Coast, from *Burlington*, *Flamborough-Head*; and thence quite to *Scarborough*, where are several found, near the *Sparw*, on the Shore.

x d. 10. A large piece, in which several of the Tali are separated from the Partitions, and are wanting, the Cells or Places of them being empty. Those that remain are of a dark brown Colour, the Partitions are, as in the other, composed of several Plates, but more gross than in any of the rest. They appear outwardly of a reddish Colour. One or two of the Cells seem to have been fill'd with a talky Spar, which is pellucid with a dusky yellow Cast, and indeed seems to be much of the same sort with that of the Partitions. One of the Tali had a *Cornu Ammonis* immersed in it, a Joint of it being very evident: and I think the Edges of the Shell. In a Gravel-Pit near *Oxendon-Church*. Mr. Morton. I found pieces of *Ludus Helmontij*, very like this, by a Brook on *Hamstead-Heath*: as also in a Clay-Pit, at *Harrow* on the Hill.

x d. 11. Another, not so big, of an oval Figure, and worn by the Sea. The Tali are part of a light brown Colour, and part of a darker, spotted with Grey, the Spots being only the Ends of Tubes fill'd with a grey Stoney Matter. They are of that sort which Dr. Grew calls the *Piped Waxen Vein*. (Class IV. Part 4.) The Cases of the Tali are of the same Matter and Colour with those of x d. 1, and 2. but stand further asunder, being distanced by the Interposition of a middle Partition, that is in some places  $\frac{2}{10}$  of an Inch over. This consists of the same sort of Matter with that of the *Pyrites*: and is for the main of a dusky Hue, but in some Parts yellow and glittering. In some Parts of the Body that middle Partition is discontinued: and the Spaces there left empty; where the two opposite Surfaces of the Sparry Cases, on each side those Spaces, are shot into *Tubercula* & *Efflorescencies*. Shores of *Sheppy Island*, near *Minster*.

x d. 12. A small Piece of a *Talus* of the *Ludus Helmontii* of a brown Colour, with Part of a yellowish semidiaphanous Crust adhering to it. Upon the Outside of the Crust is a Cluster of crystalliz'd Grains of *Marcasit*, small, and all tending towards a cubic Figure, From the great Tile Clay-Pit near *Richmond-Wells*.

x d. 13. A large Piece, of a somewhat darker Colour. On one side is a large Segment of a shining Crust striated a-cross adhering to it. On the Outside of it, at some distance from each other, are three Studs, each about  $\frac{1}{2}$  Inch in Diameter, of a bright shining yellow Brass-like *Marcasit*, set all over with small square Brassy Scales. The *Sparry Plate*, as well as the *Marcasit*, is florid, and crystalliz'd; the Crack, in the middle of the Body, in which they were form'd, being capacious, and affording room for these Crystallizations. All the *Tali* of this Body were variegated with a light Brown, and a dark Grey. From the same Clay-Pit.

x d. 14. Another, with two like Efflorescencies of *Marcasit* standing so close, that they intrench somewhat upon one another. From still the same Clay-Pit.

x d. 15. Another, very small, with a like hemispherick *Marcasit* affix'd upon it. Tho' this *Marcasit* be of the Bigness of those above, the Scales upon its Surface are much less. 'Tis broken, and appears within to consist of Brassy Threads, or Striæ, tending from the Surface of it to its Center. From the same Clay-Pit likewise.

x d. 16. A Piece of a *Talus* of the *Ludus Helmontii*, cover'd with a yellow Crust, on one side of which grows a white semipellucid ralky Spar; composed, much like the *Marcasit* in the foregoing Body, of several small Filaments tending towards the same Center. Upon which account, Dr. Grew calls another like Body the *Starr'd Waxen Vein*. (Museum Reg. Soc. p. 312. & Tab. 21.) The *Sparry Crystallization* is  $\frac{3}{4}$  of an Inch over. The Surface of the *Sparry Crust*, upon which the Spar is affixed, is tuberos and florid; the Crack in which the Crust and Star were form'd being capacious, and allowing room for those Efflorescencies. This, as also that of Dr. Grew, was found upon the Shores of the Island of *Sheppy, Kent*.

x d. 17. A flat Stone, made up of many *Tali* irregularly pentangular. They are small, generally not above  $\frac{3}{4}$  of an Inch in Diameter: and of a light brown Colour. They seem to be of a firmer and closer Constitution, than those of any the precedent. The Partitions pass through the Body of the Stone, appearing in much the same manner on the two opposite Flats of it. They are of a Colour darker than that of the *Tali*, and composed of a ferruginous or ochreous Matter. They are very thin; being only like so many pentangular Lines, little broader than an Horse's Hair, described upon the two flat Surfaces of the Stone. This elegant Body I found upon the Shores of the Island of *Thanet*, near the *North-Foreland*.

x d. 18. Another, of a rounder Form; otherwise little different. It seems to have been worn by the Motion of the Sea, and by that means reduced to a rounder Form. Found along with the foregoing.

x d. 19. Another, small, of a compress'd oval Shape; and a light brown Colour. Upon each of the two opposite Surfaces appear several black Lines, describing irregular angular Figures. These are only the Edges of the Septa; which, in this Body, are very thin. This was found on the East Shore of the Isle of Grains, near the *Ostium* of the *Thames*.

x d. 20. Another. In this the Partitions are of a whitish Colour, with a talky shining Gloss. The *Tali* of a light Brown. Found alone in the Road at the North End of *Masbam*, *Yorkshire*.

x d. 22. Another, in which the Partitions are in some parts near  $\frac{1}{2}$  an Inch thick, of a dark Colour, glossy, and composed of Filaments running parallel and transverse to the Planes of them. The *Tali* are of a dark grey Colour, and very hard. From *Crick* in *Northamptonshire*. Mr. *Morton*.

x d. 23. Another small Piece from the same Place, and not different, only it has a triple Partition, two Plates whereof are of the same Texture and Colour with the former, and each about  $\frac{1}{2}$  of an Inch over; between which is interpos'd a Plate of a very white talky Spar, about  $\frac{1}{8}$  of an Inch in Thickness.

x d. 24. Found near *Cole-Ashly*, *Northamptonshire*. The *Tali* of this are of much the same Constitution with that of those found in *Sheppy-Island*, x d. 2. & seqq. The *Septa* are composed of a grey glossy Spar; which, in one of them, is crystalliz'd, and run into trigonal Shoots.

x d. 25. Part of a *Ludus Helmontij*, in which the *Tali* are of a very dusky brown Colour, near black, appearing to hold Iron, as several of these Bodies do. The *Septa* seem to be composed of various thin Plates, they being all lineated length-ways. They are striated across, in a manner not very unlike that of the Crusts of the *Hamatites*. There are Sea-Shells immers'd in several Parts of it; one of which seems to be intersected by a Sparry *Septum*. If that be really so, 'twould be a Proof that the *Septa* and *Tali* were not form'd at the same time; but that these Bodies have been burst or chink'd since their first Consolidation, and the Chinks afterwards fill'd with a Sparry Matter that insinuated itself into them. When 'tis expos'd on the Surface of the Earth to the Air and Weather, it shatters and falls to pieces. Of this there were several Instances in the Heap flung by the Workmen out of the Tile Clay-Pit where I found this Body; which is upon the very Top of *Shooter's-Hill*. There are several Clay-Pits upon and about that Hill: and the *Ludus Helmontij* is found in most of them. By the Samples I saw there of that Body, it appears plainly to have been a Nodule: and most of those I observed in that Place, were externally invested all over with Crusts, from  $\frac{1}{4}$  of an Inch, to an Inch in thickness, composed of a pale brown Stoncy Matter. The Bodies were of several Sizes, up to the Bigness of a Man's Head. In the Cliffs of *Sheppy Island*, I formerly took notice of several that were much larger; of which see x d. 1. *supra*.



x.d. 26. A Piece of one of the aforementioned Crusts. From the same Clay-Pit.

x.d. 27. Part of another *Ludus Helmontij*, little different from that x.d. 25. and found in the same Pit. 'Tis observable, that there is in this a Suture, running cross one of the Septa, where another comes up to and joins it. There are inclos'd in this also several small Bivalves, of the same Kinds with those commonly met with in the Sand-Pits and Clay-Pits about *Black-Heath*.

x.d. 28. Part of a *Ludus Helmontij*, of a pale brown Colour. In this, and in several others, I saw in the same Pit, is a Mixture of Matter that is yellowish, and in Consistence very like Yellow-Ochre. The Partitions are striated across: and, as they tend towards the Crust, they gradually lessen. One of them also divaricates into two: and another into several small ones. The same I observed in others of these Bodies there. They sometimes enter into the Body of the exterior Crust: but I never saw any that quite pass'd it to the Surface. This Piece was found in a Tile-Clay-Pit near *Peckham*, in *Surrey*. I observed here, in some of these Bodies, those fuliginous Delineations of Shrubs, call'd commonly by Writers *Dendritæ*: and these upon the *Tali*, on each side the *Septa*. Most of these Bodies here were externally cover'd with a Crust. They were of all Sizes to the Bigness of an Horse's Head: and generally of a compress'd or flattish Form. I observed in the same Pit, other Bodies of like Form and Bulk: but constituted of a gritty Sand, and composed of Crusts alternately grey and brown, in manner of the *Bezoar Minerale*.

x.d. 29. Part of another, the *Tali* of a deep brown Colour, with a Blush of Purple, very like some Iron Ores, and seeming to hold some of that Metal. The Septa, or Partitions, are striated, both long-ways and cross-ways: and upon one there are Vestigia of Sutures, where the other cross Septa come up to, and join it, as in x.d. 27. Out of a Tile Clay-Pit at *Norwood*, about a Mile from *Croydon*, *Surrey*.

x.d. 30. A *Ludus Helmontij*, the *Tali* outwardly of a pale brown Colour, and grey within. The Septa terminating sharp, in Edges, on all Sides of the Body. Where broken, they appear to be striated both length-ways and cross-ways. This Body seems to be intire, and not to have been invested with a Crust. Out of the great Clay-Pit at *Richmond*, *Surrey*. These Bodies are found in this Pit in great Numbers, and of all Sizes, to double the bigness of an Horse's Head. The greatest part of them are invested with Crusts. In breaking several of these, I observ'd, immers'd in the Mass of the *Tali*, Sea-Shells, both turbinated and bivalve, of the very same sorts with those commonly found lodg'd in the Clay of this Pit. These Bodies, when expos'd to the Air and Weather here, and in the other Tile Clay-Pits of *Middlesex* and *Surrey*; in most of which they are found, shatter, in time, and fall to pieces.

x.d. 31. A Piece of a *Ludus Helmontij*, in which the Septa are of a dark grey Colour in the Middle, and white on each Side. From the same Clay-Pit, at *Richmond*. x.d. 32.



x d. 32. Another, that appears to have been expos'd to the Weather, and fretted. In this the Septa gradually lessen, and come to an Edge, as they approach the external Crust. From the same Clay-Pit.

x d. 33. Part of a *Talus* of another, still from the same Clay-Pit. The *Septum*, adhering to the Surface of this, is shining, glossy, and appearing very much like Velvet. 'Tis indeed little different from that on x d. 13, and x d. 14. only the Colour is deeper, or more dusky than in those.

x d. 34. A Fragment of a *Ludus Helmontij*, found in a Brick Clay-Pit North of *Lamb's-Conduit*. The Surface of the *Septum*, adhering to it, is glossy, and much like that of the precedent. I observed in several of the Masses of *Ludus Helmontij* in this Pit, the Septa were, in some Parts of the Body, discontinued, and the Spaces not fill'd : but empty, in form of Cracks.

x d. 35. Part of a *Ludus Helmontij*, the *Tali* brown; but externally, and where contiguous to the *Septa*, of a dusky Iron-Colour. (*Conf.* x d. 41. *infra.*) The *Septa* are finely plated, and striated across. Found in a Tile Clay-Pit, at the South-East Side of *Highgate*. This was broke off that x d. 43.

x d. 36. A *Talus*, with part of two or three others adhering to it; as also the *Septa*, which are plated, and striated across. In this there is a Vacancy in the middle of one of the *Septa*, in form of a Crack or Vein: and the Plates on each side have the Surfaces glossy, like those mentioned x d. 33, and x d. 34. This Gloss, and various Reflection of the Light, arises from the shooting of the Spar into extremely small Crystals, on the two opposite Sides of the Crack; that Crack allowing it room to shoot and crystallize in. Which doubtless was the Case of all the Plates that are found with their Surfaces thus crystalliz'd. (*Confer.* x d. 11. *supra.*) From the same Pit with the foregoing.

x d. 37. Part of a *Ludus Helmontij*, found amongst several others in a Tile Clay-Pit, about two Miles from *Layton-Stow*, in *Epping-Forest*. In this the *Septa*, passing from the Center towards the external Crust, become gradually less: and, in one part, there arise from the Surface of a Plate, Crystals somewhat larger than in any of the foregoing Bodies.

x d. 38. Part of another *Ludus Helmontij*, from a Brick Clay-Pit betwixt *Marybon* and *Soho*. The Sparry Partitions, in this, approaching towards the Outside of the Body, grow gradually less: and one of them divaricates into four smaller Branches. These Bodies in this Pit, in that on the backside of *Gray's-Inn*, those by *Hogsdon*, *Islington*, and some others that lie North of the Town, are commonly round: and of a flat or compress'd Shape. In these the Septa run ordinarily across them: and are largest in the Middle; gradually lessening as they approach the two opposite Flats. Some I observ'd, in all those several Pits, in which there were only transverse Cracks, without any Spar at all in them to compose the Septa. Some others, like *Ludus Helmontij*, with like Cracks

Cracks in them, I observed in a Tile Clay-Pit at *Holloway*, near *Highgate*.

x d. 39. A Piece of a *Ludus Helmontij*, from the Tile Clay-Pit at *Kilburn*, near *Marybon*.

x d. 40. Six Pieces of a *Ludus Helmontij*, in which are immerfed great Numbers of a fort of *Pectunculus*. The *Septa* paffing towards the exterior Cruft gradually leffen, as in the precedent. Several of the Shells are broke; and have the *Septa* directly paffing thorough thofe Breaches. This imports that the Stone was broke after 'twas consolidated, and the Shells incorporated with it; and that the Spar, that constitutes the *Septa*, only fucceeded and fill'd up the Cracks. Crystal is one of the moft obvious Minerals of this Country; and the Fiffures of the Strata of Stone in moft parts of *England* have considerable Quantities of it, partly pure, but much more commonly mix'd, and in form of Spar, collected and drain'd into them. This was repositied, originally, difperfedly, and in fingle Particles, or at leaft very fmall *Molecula*, in the Interftices of the Sand that compofes thofe Strata of Stone. They muft have been extremely *fmall*, or they could not have pafs'd the Pores and Interftices of the Stone, as 'tis apparent they did, in order to get into the Fiffures of the Strata of Stone, the Cracks of the *Ludus Helmontij*, and other Bodies. Thefe Cryftalline Particles are, in like manner, mingled and interfperfed among the Earth, Clay, or other like Matter that compofes the laxer Strata. Now the Parts of this Mineral being fmall, light, and difpofed to be moved along with the Water and Humidity which is continually paffing the Strata, it is commonly derived and drain'd out of them, and convey'd and repositied in the Cracks and Fiffures of Stone. For thefe give way to the Motion of the Water; which therefore naturally tending towards them, carries the fparry Corpufcles along with it thither, where there is Room and Reception for it, and where it affixes and concretes to the Stone on the Sides of the Cracks and Fiffures. By this means the Spar, and other Mineral and Metallic Matter, is brought into the perpendicular Intervals of the folid Strata\*. By the fame means the fparry Veins are form'd in feveral forts of Stone; as alfo thefe *Septa* in the *Ludus Helmontij*. I have taken notice elfewhere (o. 105. *infra*) of a fort of Spar compofed of Crystal and *Lac Luna*. This, that constitutes thefe *Septa*, is compofed of Crystal, with an Intermixture of a fibrous Talc. There is likewife a flight Proportion of other Matter, fometimes Mineral, and fometimes Metallic, in feveral of them; nay, fome of them feem to hold fome fmall fhare of Vitriol in them.

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\* *Nat. Hift. of the Earth, Partiv. Consec. 4, 5, & 6.*

The *Septa* in this, and other of these Bodies, gradually lessen as they approach the outer Crust, and terminate without ever reaching it: as do also the Chasms or Cracks, of which there is an Example in the foregoing; but the Bodies might have been crack'd in their interior Parts, and yet the Cracks not always extend to the Surface. Of this we have Proofs and Instances in the crack-ing of Clay, and of Timber, as they dry, and certain Parts growing closer, quit others. In Timber, or Trees fell'd, upon the Sun's drawing forth the Sap, the Knots are the aptest to crack. Again, Spray-Wood in charring, parts frequently into various Cracks, made from the Axis of the Spray towards the Surface; but terminating before they reach the Surface. Which is the very Case of those *Ludi Helmontij*, whose Cracks or *Septa* do not pass the outward Crust.—In *Lud. Helm. f. 434.* of the second Part of this Catalogue, one of the *Septa*, approaching a firm robust Shell, fill'd with a very hard *Pyrites*, divides into two; so as to attend the Surface of the Shell, incompass it, and take the Impression and Figure of it. From a Tile Clay-Pit on the East-side of *Highgate*, near the top of the Hill, which indeed appears to be the highest Ground thereabouts for several Miles round. The Shark's-Tooth, N<sup>o</sup> 69. of the second part of this Catalogue, was found in the same Pit. These here, the Sharks-Teeth found on one of the highest Hills in *Epping-Forest*, *ibid.* N<sup>o</sup> 70. those found at *Harrow on the Hill*, N<sup>o</sup> 67 x. and those found in that Hill above *Richmond* in *Surrey*, N<sup>o</sup> 64. along with a great Variety of Sea-Shells, afford us Instances of Remains of the Deluge in several of the highest Parts of the Country hereabouts. Like Instances there are, in the other Catalogues, of those Remains deposited in the highest Hills of the other Counties of *England*; as well as in those of foreign Countries.

x d. 41. Part of a *Ludus Helmontij* of that sort mention'd x d. 38. Found in a Brick Clay-Pit, North from *Grays-Inn*, near *Pindar of Wakefield*. 'Tis broke thro' the middle; from whence the *Septa*, tending towards the Surface, gradually lessen: and terminate before they reach the Crust. The *Tali* are of a grey Colour, as also the Crust; only this has withal a Cast of brown. There were, as in *Flints\**, and many other Fossils, in this, and others of these Bodies, several Cracks, so fine as not to appear to the naked Eye, only the Bodies in breaking, easily part, and fall to pieces at them; and the Bodies on each side the Cracks are tinged with a reddish or Iron Colour. But neither those Cracks,

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\* *Flints* are found very commonly in the Earth crack'd, and parted into various Segments, particularly in the Gravel-Pits on the East-side of *Hyde-Park*. And there are frequently *Dendritæ* delineated on these, in like manner as sometimes on the *Ludus Helmontij*.

nor that Colour, pervaded the external Crust. *Conf. x d. 35. supra.*

x d. 42. Part of a Crust of a *Ludus Helmontij*, of an ochreous, or yellow Colour; appearing to be composed of numerous thin parallel Plates. 'Twas not so firmly join'd, but that it parted easily from the interior Body, as if there was only a lax and slight Adhesion of the Crust to that Body; the *Tali* of which were of a Rust Colour. From a Tile Clay-Pit, in a Field near *Pancridge*. The *Ludus Helmontij* that is invested with a Crust, originally, before 'twas crackt, and the Septa form'd, appears to have been nearly related to the *Bezoar* Mineral. And indeed those mentioned. x d. 28. *supra*, are no other than *Ludus Helmontij* not crack'd.

x d. 43. A large Piece of a *Ludus Helmontij*, part of the same with that x d. 35. The Body was of a flat compress'd Form, roundish, and very large; being, in most parts of it, about 14 Inches thick, and near 3 Foot broad. It lay in the Bed of Tile-Clay, about 8 Foot deep, flatways or horizontally, as did those I observed in the Cliffs of *Sheppey* Island; and indeed all the Flints, *Pyrite*, and other Nodules, (all which were form'd in the Water at the Deluge, before the Subsidence†,) that are of like Shape. The Fossil Bivalves, and other flat Shells, lie generally in the same Posture into which all these would naturally settle at their Descent from the Water. These broad flat Bodies being thus found universally in all Parts of the Earth repositied flatways, or parallel to the Strata in which they lie, is one of the many Arguments there are, that they, and the Matter amongst which they lie, subsided from a Fluid in the same manner all round the Globe. In this Piece the Septa are very finely plated, and striated across. Tending towards the exterior Surface they gradually lessen, and some of them divaricate into small Branches. Found in a Tile-Clay-Pit on the S. E. side of *Highgate, Middlesex*.

x d. 44. Another Piece of the same Stone.

x d. 45. Part of a *Ludus Helmontij*, also from the same Pit. This shews very fairly the gradual Diminution of the Septa, as they approach the Surface of the Body, as also the Manner of the Application of the Spar to the Tali on each Side the Cracks, and the successive Formation of the several Plates that compose the Septa; which indeed the following and several others do.

x d. 46. Another from the same Pit; the Septa finely plated, and striated.

x d. 47. Another, likewise from the same Pit. Thorow the middle of one of the Tali of this there passes a thin Septum, that also passes and intersects one of the larger or common Septa. The Crack, which this Septum fills, was apparently made, not only since those Cracks in which the larger Septa are, but even since

† *Conf. Nat. Hist. Earth, Part iv. Conf. 2. 3. where these Particulars are made out.*



those larger Septa themselves were formed. Of this there are also like Instances in the three following Bodies. Indeed the Partitions in the *Ludus Helmontij* appear not only to be made by the cracking and starting of the Parts, but 'tis manifest that those Cracks were made by the Body shrinking and contracting at different, and considerably distant, times, successively, each after other.

x d. 48. Another from the same Pit.

x d. 49. Another from still the same Pit.

x d. 50. Another, from the same Pit also.

x d. 51. A *Ludus Helmontij*, with part of the Crust broken off, to discover the interior Constitution of it. 'Twas of an oval Figure, near one Foot in Length, and above  $\frac{1}{2}$  Foot over. The Septa are veined, and striated across. Passing towards the Crust, they gradually lessen; from still the same Pit. The Mass of the Tali is in some Parts of a light brown, and in others of a dark grey. Even the different Parts of the same Talus are of those two different Colours, and the Cracks and Septa uncertainly and indifferently pass both.

x d. 52. Part of another, less, from the same Pit. 'Tis of a compressed Form, the interior Parts are of a deep brown, and the Crust of an ochreous, or light brown. The Septa generally pass cross-ways, and from Flat to Flat, gradually lessening towards each Extreme, as they approach the environing Crust. I have observ'd very many of the *Ludus Helmontij* of a grey Colour, in the Clay-Pits in the Fields all along the North Side of London, from Hogsdon to Paddington, that have the Septa of like Constitution, and crossing the Bodies in the same Manner.

x d. 53. A *Ludus Helmontij*, of a flat compressed Shape, 9 Inches in length, 7 in breadth, and  $2\frac{1}{2}$  in Thickness, in the middle, from which it gradually thins, and lessens towards the Edges. The Stone is very compact, hard, and of a dark grey Colour. The Septa are of a talky Spar; white, with a Cast of Yellow. They are very numerous, and stand very thick in the Stone. From *Low-Easfort* in *Suffolk*.

x d. 55. *Ludus Helmontij*, the Stone of a very pale brown Colour, the Septa white, with a Cast of yellow. The Surfaces of the Plates that constitute those Septa, are in some Parts shot into extreme small Crystals. Where this happens, there are betwixt the Plates, Hollows and Intervals, where commonly the Stone parts in breaking, which this also did, except only on one Part, where one of those Intervals is observable. This was found, among several others, about 12 Foot deep, in sinking near the *White-Tower*, within the Precincts of the Tower of London.



## CLASS IV. PART V.

Lapis Syringoides, s. Tubulis refertus. *The Piped Waxen Vein\**. With an Appendix relating to the Piped Pyrites.

## EXTRACT.

C. 1. Of the *Tubuli* or Pipes.

The Pipes are of a yellow Colour with a Cast of green. ‡ d. 1.

— and are compos'd of various Crusts, including one another, and striated across; like the Septa of the *Ludus Helmontij*. ‡ d. 3. 5.

They consist also of a talky Spar, much like that of those Septa. ‡ d. 1.

— and are most of them about the Thickness of a Swan's Quill. ‡ d. 1.

— generally round, but some of them compressed. ‡ d. 1. 10. 14.

They lie ordinarily all the same way, and parallel to each other. ‡ d. 1.

— tho' sometimes they vary in their Postures, and lie cross one another. ‡ d. 5. 9. 13. 21. 22.

They are commonly pretty straight. ‡ d. 1. & seq.

— but some of them are inflected. ‡ d. 12. 18.

They are not ever in equal Number in all Parts of the Stone; but lie thicker in some Parts than in others. ‡ d. 15.

In some of these Bodies they are covered with a fine Reticulum of a blackish Colour, and rise into various round Tubercles. ‡ d. 14.

Many of them are empty, and parted into Cells, by transverse Diaphragms. ‡ d. 1. 2. 3. 18. Conf. Cl. 5. § 2. Part 2. *infra*.

The Cells are thick set, and lined with small Crystals, like those of the Septa of the *Ludus Helmontij*, where the Plates part so as to leave an Interval for those Crystals to shoot in. ‡ d. 5.

Some of them are filled with a grey stoney Matter, ‡ d. 1. 10.

Others with a white talky Spar. ‡ d. 9.

Others with a Pyrites. ‡ d. 1.

Some of them are composed of a Crust of Pyrites within a Crust of Spar. ‡ d. 8. 15.

Others consist intirely of a yellow shining Pyrites. ‡ d. 18. & seq.

\* Dr. Grew, *Musaeum Reg. Soc.*

In some, the tubular Pyritæ, tho' within of a brassy shining Constitution, are externally Black, and striated lengthways, partly empty, only having in them various Efflorescencies of the *Pyrites*, very bright, fine and glittering with yellow, green, blue, and other Colours, and partly filled with a grey stoney Matter. ‡ d. 16.

C. 2. Of certain Partitions in this Body, like those of the *Ludus Helmontij*.

In some of these Bodies are Septa of a yellow talky Spar, not differing from that of the Tubes. They are composed of various Plates, striated across, and exactly of both the same sort of Matter, and the same Constitution with the Septa of the *Ludus Helmontij*. ‡ d. 5. 7. 10. 23. Conf. ‡ d. 5. & x d. 40. Append.

The Surfaces of these Septa are sometimes thick-set with crystallin Shoots, exactly like those of the Septa of the *Ludus Helmontij*. ‡ d. 17.

And sometimes likewise rise into small botryoid Tubercles, like those of the *Hematites*, which the Surfaces of the Septa of the *Ludus Helmontij* likewise sometimes do. ‡ d. 5.

C. 3. Of the Stone in which the Pipes are immers'd.

A black Stone, with Sparks of a brassy *Pyrites* in it. ‡ d. 13.

A grey Stone thick set with small Tubercles. ‡ d. 11.

A Stone, in some Parts brown, in others grey. ‡ d. 10.

Another like Stone with *Pyrites* in it. ‡ d. 14.

Some Instances there are of this Stone of a brown Colour, and composed of Fibres, running all across to the Site of the Pipes. ‡ d. 1.

Others composed of Fibres running lengthways, or parallel to the Pipes. ‡ d. 5. 6.

A few there are that resemble petrify'd Wood. ‡ d. 10.

As also that resemble charr'd Wood. ‡ d. 12.

Some of these Bodies, like the *Ludus Helmontij*, are externally covered over with a stoney Crust. ‡ d. 11. 13. & seq.

C. 4. Of the Origin and Formation of the *Lapis Syringoides*.

These Bodies are frequently found lodg'd in Beds of Clay along with the *Ludus Helmontij*; and, as several of that kind, so some of these also are externally invested with a stoney Crust. ‡ d. 11. 13. 14. 15. The Pipes differ indeed in Form from the Septa of the *Ludus Helmontij*, but they agree with them in all other respects; e.g. They consist of various Crusts, set one within another. These are striated across, and composed of talky Spar, of the very Colour and Constitution of that of those Septa. This Spar is crystalliz'd also, in like manner as in those, and has sometimes Crusts of *Pyrites* of the same sort that those have. Nay, there are Instances of this Stone's being intersected by Septa of the same

Nature and Texture with those of the *Lodus Helmontij*. In fine, 'tis without Contest, that the *Lapis Syringoides* is a Nodule, and was formed at the same Time, and by the same Means that all other Nodules were \*. But as to the Pipes in it, the Samples I have met with, and the Observations I have hitherto had opportunity of making, have not exhibited Phenomena numerous enough, or afforded Light sufficient, either to clear the Natural History of them, or determine my Judgment as to their Origin, which therefore must be suspended and reserved to future Enquiry.

Mean while, if I might be permitted to offer a Conjecture in so abstruse and uncertain an Affair, it should be, that as the *Lodus Helmontij*, and the other Nodules have in them Sea-Shells that were incorporated with them during the Time of their Formation in the Water at the Deluge, so these Stones had then incorporated with them testaceous Tubules, related to the *Siphunculi*, or rather the *Vermiculi marini*. And there are several of them, particularly that  $\S$  d. 3 \*. that exactly resemble those Bodies, and are not to be distinguish'd from them. That Stone likewise  $\S$  d. 12. has in it several Tubules that appear to be not sparry, but really testaceous. Now if there were thus tubular Shells originally incorporated with, and immers'd in the Stone, they might be eroded, and in tract of Time quite dissolved by the Vitriolic Salts, with which the *Pyrites* abounds, and which are so plentiful in the Clay of that Pit near *Richmond*, wherein the greater part of these Bodies were found, as to impart a purging Quality to the Water that arises out of it. And as much of the said testaceous Matter of the Tubules as was so eroded, would be successively, in the usual manner, supply'd by Spar, brought by little and little, and deposited in the room of it, by the Water that is ever more or less impregnated with sparry Matter, and is continually pervading the Strata. Or, where that Water happen'd to be more copiously saturated with the Corpuscles that constitute the *Pyrites*, it would deposit them, and so form the Tubular *Pyrite*. At least it is very certain, that this was the Case of several sparry Bodies in form of *Concha*, *Cochlea*, and other Sea-Shells, of which there are many Instances in the second Part of this Catalogue.  $\S$  d. 23.

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\* Vide Nat. Hist. of the Earth, Part iv. Conf. 2. 3.

## CLASS IV. PART V.

*Lapis Syringoides, s. Tubulis refertus. The Piped-Waxen-Vein. With an Appendix relating to the Piped Pyrites.*

‡ d. 1. A flat Stone, broken so as to shew the interior Constitution of it, in which are several Tubes, most of 'em streight, and lying parallel to each other. They are chiefly of a yellow Colour with a Cast of green, and run through the whole Length of the Stone, which is 4 Inches  $\frac{1}{2}$ . The Thickness of the Sides of the Tubes is about one 20th of an Inch; the whole Tube generally about the bigness of a Swan's Quill, only some few there are less. Most of 'em are empty, and are parted at some Distances into several Cells, by Valves, or rather Diaphragms, consisting of the same Matter with the Tube. A few of them are wholly filled with a grey Stoney Substance, and one or two with a *Pyrites*. The Stone in which these Tubes are contain'd is of a brown Colour, and is made up wholly of Fibres which run directly transverse to the Position of the Tubes. From the Shores of *Sheppey* near *Minster*.

‡ d. 2. Two Tubes broken off from the foregoing Stone: and shewing very plainly the Diaphragms above-mention'd. The Tubes of these, and of several of the following, are composed of various Crufts, including one another: and striated a-crofs; like the Septa of the *Ludus Helmontij*.

‡ d. \*3. Several Tubes, some streight, others crooked, lying together in the manner of the Shells of *Vermiculi marini*. There is in the Middle one larger than any of the foregoing. There is little Stone with these. From the same Shores.

‡ d. 4. A Mass of Stone, like that ‡ d. 1. with several Tubes in it somewhat larger than those in that. From the Shores of *Sheppey Island*.

‡ d. 5. Another Stone, in which the Tubes are of much the same Size, Colour, and Matter: and plac'd in the same manner with those of N<sup>o</sup> 1. Only there is one transverse to all the rest, and is double, having a smaller Tube included in it, the End where broken appearing not unlike one of the crufted *Belemnites*. The Stone in which these Bodies lie, is of a much darker Brown than N<sup>o</sup> 1. but consists of Fibres, not transverse, as that does, but parallel to the Length of the Body, and the Generality of the Tubes: This being broke, parted at a Plate of like Constitution



with the Septa of the *Lodus Helmontij*; where doubtless was a Crack: and the Sparry Matter successively filling it, form'd the Plate; which is of the same Colour and Matter with that of the Tubes. Its Surface rises up every where in small Bubbles, not unlike those of the *Botryoid Hematites*, N<sup>o</sup> 0. 42. and is striated a-cross, as the Tubes in this Body, and the Crusts of that *Hematites* are. Found in the great Clay-Pit by *Richmond-Wells*. The Tubes consist of various Crusts, striated a-cross; and having the Bore or Cavity thick set with extreme small Crystals, like those in the Intervals of the Plates of the *Lodus Helmontij*.

‡ d. 6. A Piece in which the Tubes differ little from those of the immediately foregoing: and the Stone in which they lie, is striated length-ways, as that is. From the Shores of *Sheppey*, betwixt *Minster* and *Warden*.

‡ d. 7. Another, with a Crust upon it of the same nature with that of the Tubes, rising up into several Bubbles, cluster'd together, and set all over with extreme small crystalliz'd Shoots of the same Matter. From the great Clay-Pit at *Richmond-Wells*.

‡ d. 8. Another, in which some of the Tubes are lined, and others fill'd with a glittering *Pyrites* of a Copper-Colour. From the same Clay-Pit.

‡ d. 9. Another, very much worn, and ground by the Motion of the Sea. This is very thick set with Tubules in various Positions, most of 'em smaller than those of the foregoing, and fill'd, some with a grey Stoney Matter, and others with a white Talky Spar. From the Shores of *Sheppey Island, Kent*.

‡ d. 10. A large Stone, in some places grey, in others of a dusky Brown: with Fibres all placed length-ways of the Stone, and very much resembling petrified Wood. In the brown part of the Stone, there appear several thin Tubes, some round, others of a compress'd Shape, all fill'd with the same sort of grey Matter that the other part of the Stone consists of. There are in it a few Veins of a yellowish Talky Spar, of the same kind with that of the Tubes mention'd above. Upon the Shores of *Sheppey*. Vide ‡ d. 14.

‡ d. 11. A grey Stone, the Surface of which, on one side, rises into several round Knobs, about the bigness of Peas, set very close together. Whether they be the Ends of the Columns of Matter, filling tubular Bodies, like those before mention'd, is not easy to determine; but they seem not to pass deep into the Substance of the Stone. Found in the great Clay-Pit, near *Richmond-Wells*.

‡ d. 12. A large Piece of the *Piped-Waxen-Vein*. The Tubes in this, are much of the same Substance, Colour, and Size with those in ‡ d. 1. but are neither so streight, nor do they lie all parallel to one another, as in that. Some of them are empty: and many fill'd with a Stoney Matter of the same sort with that wherein they are immers'd; which, in some parts, is of a light brown Colour; in other, of a deep grey, and on one side of a dusky brown, with parallel Fibres, much resembling Charr'd Wood,

Wood, both in Colour and Texture. From the great Clay-Pit at *Richmond*.

‡ d. 13. Another. In this the Tubes are little different from the foregoing, but that they lie all together, very thick, and in various Positions in the middle of the Stone. The Part in which they lie, is near black, with some Sparks of a Brassy *Pyrites* in it. The Crust inclosing this has no Tubes in it: and is of a light grey Colour. From the same Clay-Pit.

‡ d. 14. A Piece of Stone much like ‡ d. 10. and with like Tubes also in it, some of them round, others compress'd, and some very much so. The Tubes are coated with a fine blackish *Reticulum*. On one Surface the Tubes bunch out into round *Tubera*, like those of ‡ d. 11. but bigger. Being broke on one side, there appears a considerable Quantity of a shining Brassy *Pyrites*. From still the same Pit. *Confer. h. 40.*

‡ d. 15. Part of a large flat Nodule, gritty, and of a grey Colour. Thorough the middle of the whole Body pass'd a large Vein of a blackish Matter, thick set with Tubules, partly composed of Spar, and partly of *Pyrites*. That ‡ d. 13. is of the same sort with this: and found in the same Clay-Pit at *Richmond*.

‡ d. 16. Part of a large Nodule, composed chiefly of parallel Pipes, of *Pyrites*, of a grey shining metallic Complexion. Externally they are blackish: and striated length-ways. The greatest part of them are fill'd with a grey Stoney Matter. In the few that are not fill'd, are Efflorescencies of *Pyrites*, very bright, and shining, partly yellow, partly of a flame-colour, green and blue. From the great Tile Clay-Pit, near *Richmond, Surrey*.

‡ d. 17. Another Piece broken off the same Body: as were also the five following.

‡ d. 18. Another. In this several of the Tubules are bended: some of them composed of Spar: and one divided into Cells, by means of transverse Septa.

‡ d. 19. Another.

‡ d. 20. Another.

‡ d. 21, 22. Two more, still broken off the same Body. In these the Tubules lie in diverse Positions: and some are placed directly cross the rest.

‡ d. 23. A Piece broke off a Nodule that was of the bigness of an Horse's Head, composed of a grey Stone, partly clear, and partly thick set with sparry Tubes, tapering, and much resembling the Shells of the *Siphunculi marini*. They generally lie parallel to one another; but some few cross-ways. In one Part of the Body is a Septum of Spar, striated a-cross, like that of the Septa of the *Ludus Helmontij*; and subdivided into several Branches, which lessen gradually as they approach the Surface of the Body. The Tubes and Septa are composed of Spar, of like Colour and Constitution. In one Part of the Body are numerous small Bodies, chiefly oblong, round, and in Form of Worms. They are black externally. Within, part of them are grey, consisting of Stoney

Matter, of like Constitution with that of the common Mass of the Nodule : and part yellow, and shining, being composed of *Pyrites*. Out of the great Clay-Pit. *Richmond, Surrey.*

## CLASS IV. PART VI.

### Belemnites. *Vide Part VI. infra.*

#### EXTRACT.

#### C.1. Of the *Conic Belemnites*.

##### § 1. Of the Shape of this Body.

*Conic*, and terminating in a Point, \**d.* 1. & *seqq.*

A Suspicion that this Body is broken: and was originally pointed at both Extremes, \**d.* 45.

It is generally round, \**d.* 1. & *seqq.* 20.

In some a little flattish, or compress'd. \**d.* 20.

##### § 2. Of the several Magnitudes of the *Conic Belemnites*, \**d.* 1 :

14. 15. 17. \*17. 19. 32. 37. 40.

##### § 3. Of the Colour of this Body.

The *Conic Belemnites* of a blackish Colour, \**d.* 30. 31.

— Of a dark Ash-Colour, \**d.* 12.

— Of a dark Brown, \**d.* 8. 9. 13. 14. 18.

— Of a light Brown, \**d.* 1.

— Of an Amber Hue, with some degree of Diaphaneity, \**d.* 10. 11. 16. 17. 40.

##### § 4. Of the external Constitution of this Body.

The Surface of the *Belemnites* is smooth. \**d.* 5.

Only it has usually one Chap or Seam running down one side, parallel to the length of it, \**d.* 40. 43. 44.

This, in some at least, passes on, tho' with a very fine Fissure, to the Middle or Axis of the Body.

##### § 5. Of the interior Constitution of the *Conic Belemnites*.

It appears to consist of a Talky Spar, \**d.* 22. 29. 37.

And is compos'd of several Conoid Cortices, Crusts, or Cups including one another, \**d.* 1. 2. 4. † 17. 19. 20. 22. 30. 31. 36. 40. 43. 45.

Those Crusts are all striated a-cross; they consisting of numerous Fibres, or Filaments, that pass them generally towards the Axis of the Body, \**d.* 1. 4. 6. 7. 8. 10. 11. 12.

14. 17. 18. 19. 20. 22. 25. 30. 31. 37. 38. 43. 45.

Tho' in some the Striae tend towards a Line placed near one side of the Body, \**d.* 17. 19. 20. 21.

Most of these Bodies have a conic Cavity in the middle. \**d.* 1.

2. 14. 17. 18. 19. 22. & *seq.* 37. 38.

This in some of them is empty. \**d.* 14. 17.

In others 'tis fill'd with Chalk. \* *d.* 2.

— with Stone of the same sort with that of the Strata in which the Body is found, \* *d.* 17. ‡ 17. 22. & seq. 29. 43.

— with a greyish Matter.

— partly a black shining Matter, and partly white Spar, \* *d.* 37.

— with a grey Alum-Mineral, \* *d.* 38.

— with a yellow Brass-like *Pyrites*. \* *d.* 30. 31.

— with a grey talky Spar, and some Admixture of *Pyrites*, \* *d.* 31.

— with a grey talky Spar, \* *d.* 29.

— with a coarse Spar, \* *d.* 26 27.

— with a semi-pellucid Spar, \* *d.* 25.

— with a white diaphanous, crystalliz'd Spar, \* *d.* 19.

This Spar in some is divid'd in several Joints, or Parts, that are at one end concave, and at the other convex; each gradually less than other, so as to form a Cone, and terminate in a Point, \* *d.* 32.

The said Joints are sometimes of a harden'd clayey Matter, having in it Flakes of Talc sometimes Sparks of a *Pyrites*, and being girded with a shining Armature, \* *d.* 32.

Sometimes of a blueish stoney Matter \* *d.* 29.

A Plate of a *Selenites* wedg'd or included in one of these jointed Cones, \* *d.* 29.

#### § 6. Several Accidents of this Body.

Some of the conic *Belemnites* have *Vermiculi Marini*, and other Sea-shells, adhering to their Surfaces, \* *d.* 14, & seq. 23.

Some of them are crack'd, inflected, distorted, and compress'd, \* *d.* 17, & seq. 38. 44.

Some of them, particularly those found, beat out of the Cliffs, on the Sea-shores, have Holes in them like those made in Wood by Worms; and seem to be eroded, or scooped by *Pholades*, or other like Creatures, \* *d.* 7. 41.

Sea-shells, Teeth of Fishes, and other marine Bodies, found lodg'd in the Strata of Chalk, Clay, Stone, &c. along with the *Belemnites*.

#### C. II. Of the *Belemnites fusiformis*, \* *d.* 34. to 36 x, &c 40.

This sort is less than the Conic, \* *d.* 34, & seq.

But is striated in the same manner, \* *d.* 34. 36.

Consists of various Crufts, \* *d.* 36. 40.

And has likewise a Seam running parallel to the length of it, \* *d.* 34. 40.

Some of these are of a grey Colour, \* *d.* 34.

Others of the Hue and Completion of Amber; with some degree of Diaphaneity, \* *d.* 40.



C. III. *Belemnites in Cuspide utrinque terminans*, \*d. 45.

This also is composed of several Crusts striated a-crois; and is, in Constitution, little different from the two precedent Kinds, \*d. 45.

But none of these, that I have hitherto met with, have any *Vestigia* of the Chap, or Seam, that the two former Kinds have, running length-ways of their Surface.

## C. IV. Observations and Reflections.

The *Belemnites* is found lodg'd sometimes in Stone, \*d. 22; & seq.

Sometimes in a blue Clay, \*d. 40.

Sometimes in Chalk, \*d. 45.

Those Fossils are of Constitution too much differing ever to give birth all to the same Body.

Besides the Matter of the Strata of Chalk, or Clay, and much more of Stone, would not have given way, or made room, after their Compilation, for the Formation of Bodies of the Bulk, to say nothing of the Texture, that some of these are of.

So that the *Belemnites* must have been form'd before the Strata were compiled.

They are every where found as much independent upon the Strata as the Sea-shells, *Pyrites*, Flints, and all other Nodules are.

For this reason, formerly, when I drew up my *Essay* towards a Natural History of the Earth, I concluded that they were mere sparry or mineral Nodules; and form'd before the Strata.

The latter of which Propositions is certain; and beyond contest. And 'tis as certain that nothing appears in the Constitution of any of them, that I have yet ever seen, but what is evidently of a talky sparry Constitution. But there are some of them, *e. gr.*

\*d. 14, & seq. 23. that have Sea-shells, and particularly of the *Vermiculi Marini*, adhering to their Surfaces. Now, tho' it be true that the same Accident is sometimes observable in other Nodules that are of irregular and uncertain Figures, and indisputably of mineral Origin; yet that is very rare: and, upon a closer Inspection and Examination of these Bodies, I observe that the Shells are affix'd to the Surfaces of them, in such manner as they are wont to the Surfaces of Bodies, lying now on the Sea-shores, upon which they live, thrive, and grow. So that I am not without some Suspicions that the Bodies upon which they are so affix'd, were form'd and existent before ever the Water of the Deluge came forth upon the Earth; and were of Animal, and not of Mineral Nature, as these now appear to be, and as I took them ever to have been. This is certain, many of the testaceous and animal Substances, then reposit in the Earth, are since dissolv'd, their Compages destroy'd, and succeeded by sparry and other mineral Matter, that at this day is exactly of their Shape and Mien; it filling the Places where they were, and so being circumscrib'd and determin'd

termin'd in its Figure by them.—Nay, there are some animal Substances, that are themselves also still extant, that yet have their Pores and Interstices so saturated with mineral Matter, as to appear, to a less heedful Observer, to be wholly mineral. Of this I have some very extraordinary Instances among the *Echini Spatagi*; some of which are so saturated with sparry, and others with flinty Matter. From an almost endless number of Phænomena, I am satisfy'd that at the Deluge, all Fossils were so far dissolv'd, as to be reduc'd to their single Atoms and Principles; and that no two of these remain'd united or coherent. And those Principles, or Particles, in many Minerals, are small and fine infinitely, and beyond Expression. These were capable of being insinuated into the finest Pores of the animal Substances; and consequently of so far eclipsing, absorbing, and disguising the animal Matter, that the Body should appear afterwards to be intirely mineral. And I leave it to further Observation and Scrutiny, whether these Bodies were not originally Horns, or other like animal Appendages; of which we see by the *Asteria*, *Entrochi*, and many more, there are or have been vast numbers at the bottom of the Ocean, that never appear upon the Shores †. Another Phænomenon I must take notice of; which is, that the *Belemnites* sometimes appear to have been compress'd, crack'd, and distorted; which is what I do not remember ever once to have observ'd in any Fossil that was not form'd in an animal Mould. But in these ‡ there are Instances of it; of which there are Accounts in the second Part of this Catalogue.

After all, I cannot conceive how the Body, that was succeeded by the *Belemnites*, should be dissolv'd, and the Shells, adhering to the Surface of it, not be dissolv'd likewise. 'Tis most probable that these Shells affix'd to the Body at the time of its Coalition and Formation, which happen'd to some other Fossils. *Vide e. 67. infra.*

Of the successive Formation of the Crusts of the *Belemnites*,  
\* d. 43.

Of the Medicinal Properties of the *Belemnites*, \* d. 24.

The Places where the *Belemnites* are found.

*Greenbith*, \* d. 1. 45.

*Northfleet*, in *Kent*, \* 2, & seq. 45, 46.

*Thurnham*, *Kent*, \* d. 36.

*Croydon*, *Surrey*, \* d. 45.

*Great Bowden*, *Leicestershire*, \* d. 16. \* d. 32.

*Ashley*, *Northamptonshire*, \* d. 32 x. 33.

*Clifton*, *Northamptonshire*, \* d. 12. 13. † 17. © 17. 20. 28. 29.

*Boughton*, *Northamptonshire*, \* d. 28.

† Vide *Nat. Hist. of the Earth*, 2d Edit. p. 25.

‡ See the second Part of this Catalogue, of the Extraneous Fossils, Class v. Part 1. Sect. 1. of the *Echini Spat.* h. 27. 32. 33. 40.

*Sherburn, Gloucestershire, \*d. 24.*

*Near Oxford, \*d. 14. 34.*

*Hannington, Wiltshire, \*d. 34 x, & seq. 42.*

*Silverton, Devonshire, \*d. 43.*

*Whitby, Yorkshire, \*d. 30. 37.*

*Spitton, Yorkshire, \*d. 9. 10. 11. 18. 40.*

*Scarborough, Yorkshire, \*d. 8. 41.*

*Sheppey Island, \*d. 6.*

*Einsham, Oxfordshire, \*d. 15.*

*Yanworth, Gloucestershire, \*d. 15. \*d. x. 17.*

*Barrington, Oxfordshire, \*d. x. 15.*

*Farmington, Gloucestershire, \*d. 17.*

*Stowell, Gloucestershire, \*d. 19.*

*Birlip-Hill, Gloucestershire, \*d. 22.*

*Norleach, Gloucestershire, \*d. 25.*

*Colne-Allens, Gloucestershire, \*d. 26.*

*Stunsfield, Oxfordshire, \*d. 34. \*d. 35.*

## CLASS IV. PART VI.

### Belemnites.

\*d. 1. A *Belemnites* of a light brown Colour, somewhat above two Inches long, and  $\frac{3}{4}$  of an Inch in Diameter in the middle; from which it lessens equally towards both Extremes. At one of them it terminates, not tapering and gradually, but suddenly, in a Point; at the other 'tis abrupt, and  $\frac{1}{4}$  of an Inch over, appearing to consist of three or four Crusts, set one within another, and having in the middle a round Cavity  $\frac{1}{8}$  of an Inch a-crofs. Found in the great Chalk-Pit at *Greenhithe*, in *Kent*.

\*d. 2. Another, little different, only the Colour is somewhat lighter; and it seems to be made up of six or seven thinner Crusts. It has a Cavity at the obtuse End, as the other has, which in this is full of Chalk. In a Chalk-pit near *Northfleet*, *Kent*.

\*d. 3. Another, less; from the same Chalk-pit.

\*d. 4. Another, still from the same Chalk-pit. This is broken, and appears to be made up of several Fibres, transversely passing thro' all the Crusts, to the Axis of the Body.

\*d. 5. Another, with its Outside very rough, as if eroded; the former, and indeed all these Bodies having their Surfaces usually smooth. From the same Chalk-pit.

\*d. 6. A Piece of a larger, much rougher than the former, having in its Sides some Holes made, and those so great, as to reach almost to the Axis of the Body. This too is striated from the Surface to the Axis. Where smooth, 'tis semi-pellucid, and of a yellow Cast, somewhat deeper than that of the Piped-waxen-

Vein,

Vein, and glitters slightly not unlike a dusky *Scalantes*. Found on the Shores of *Sheppey-Island*.

\*d. 7. Another, having several Holes and Furrows in it, appearing exactly like the Erosions of Worms in Wood. 'Tis broke at the obtuse End, and striated from the Surface to the Axis. From the Shores near *Scarborough, Yorkshire*.

\*d. 8. A *Belemnites* very much like that N<sup>o</sup> 1. only of a darker Colour. 'Tis a little broken in one part, at the obtuse End; and appears to be striated thro' the Crusts towards the Axis. Found in a Clay-pit near *Lambeth*.

\*d. 9. Another little different from N<sup>o</sup> 4. but of a sadder Colour. Taken out of a blue Clay in a very high Cliff near *Spitton, Yorkshire*. They are found plentifully in that Cliff; but many of them are very brittle, and even friable.

\*d. 10. Another, very small. This is pellucid, and of a pale Amber Colour. The obtuse end of it is smaller, and comes nearer a point, than in any of the former. 'Tis striated, or rather made up of Fibres tending from the Surface to the Axis, as this sort of Bodies generally are. Found with the precedent in *Spitton-Cliff*.

\*d. 11. Another from the same Cliff, and of the same Colour, only somewhat darker, and striated in like manner. The Point of this is like the Point of that \*d. 1.

\*d. 12. Another, no way different from N<sup>o</sup> 10. only of a dark Ash-colour, and not pellucid. In a Quarry West of *Clifton*, half a Mile from the Town, *Northamptonshire*.

\*d. 13. Another, little different from N<sup>o</sup> 3. only of a sadder Colour. From *Clifton-Quarry*.

\*d. 14. Another large one of a brown Colour;  $5\frac{1}{4}$  Inches long, and its Diameter at the obtuse end 1 Inch and  $\frac{1}{10}$ . This is more taper than any of the former, lessening gradually to a sharp point. It has a conical Cavity at the obtuse end  $2\frac{1}{2}$  Inches deep,  $\frac{2}{10}$  of an Inch over at the top; and consequently the Crust, which is single and striated a-cross, is about  $\frac{1}{10}$  of an Inch thick. There are adhering to it a *Vermiculus Marinus*, and three small Shells of a sort of Bivalve, found frequently in the Stone-pits about *Oxford*, and seeming to be of the Tree Oyster-kind. There are *Vestigia* of several more that have stuck to it, but are now broken off and gone. They seem to adhere only to its Surface, and not to be incorporated with the Matter of the Stone. Found in a Stone-pit on *Cowley-Common*, near *Oxford*. [There are parts of *Balan* affixed on the fossil Coralloid, e. 67. *infra*.]

\*d. 15. Another, less, otherwise little different; having likewise one of the same Bivalves, and two or three *Vermiculi*, sticking to it. Stone-pit, near *Einsham, Oxfordshire*.

\*d. 15+. A Piece of another, with several Shells of the *Vermiculi Marini* adhering to the Surface of it. *Sherburn, Gloucestershire*.

\*d. 15⊖. Another, with two or three like *Vermiculi* upon it. Stone-pit near *Yanworth, Gloucestershire*.



\*d. 15 x. Another having on it five small *Vermiculi*, twirl'd in such manner as to resemble a sort of small *Cochlea Marina*. *Barrington* great Quarry, near *Burford*, *Oxfordshire*.

\*d. 16. A *Belemnites* terminating in a pretty blunt Point, semi-pellucid, and somewhat resembling Amber. *Bowden*, *Leicestershire*.

\*d. 17. Another, with a conical Cavity; and having its Sides which are very thin, striated a-cross. 'Tis of much the same Colour with the former, but not quite so pellucid. 'Tis but  $1\frac{3}{4}$  Inch in length. Toward the Cone there is a circular Crack in the Stone, at which the Body is bent a little. *Farmington*, *Gloucestershire*.

\*d. 17 x. Another, larger, being  $2\frac{1}{2}$  Inches long; and having its Cavity fill'd with a brown Sand-Stone. This is crack'd in several places: much compress'd, and distorted; in such manner as that it appears to have sustain'd some great external Force upon it after its first Formation. *Yanworth*, *Gloucestershire*.

\*d. 17 ‡. A Piece of a *Belemnites*, crack'd likewise and compress'd. 'Tis the larger or obtuse part of the *Belemnites*; its Cavity being fill'd with a brown Sand-Stone. At the bigger end it consists of one thin Crust striated a-cross; but one side being broken lower down, there appears another like Crust within it. At the other end, where it is broken diametrically a-cross, it is made up of four Crusts, one within another, and striated transversely; which Crusts are parts of so many concave Cones. From *Clipston-Quarry*, *Northamptonshire*.

\*d. 17 ⊖. Another small one from the same Quarry, crack'd compress'd, and distorted.

\*d. 18. A *Belemnites*, little different from N° 16. only not quite so pellucid, being of a somewhat more dusky Colour. Found in *Spitton-Cliff*, with N° 9.

\*d. 19. A large *Belemnites*, near as big as that N° 14. and much of the same Shape. The Apex, or lesser End of it is broken off, where the *Stria*, arising from the Surface all round, tend, not to the Middle, or Axis of the Body, but to a Line, placed much nearer one side of it, being not above  $\frac{1}{4}$  of the Diameter of the Body distant from the Surface on that side. So that the *Stria* or Fibres there, are not above one third of the length of those tending to that Line from the opposite side. The Crust at the other end is striated a-cross; and on one side is part of a second Crust, within the other, striated in like manner. The rest of the Cavity is filled up with a white diaphanous crystalliz'd Spar. *Stowell*, *Gloucestershire*.

\*d. 20. Another, broken at each end, and of a flattish form, all the foregoing being round. It appears at the Breaches at both ends to consist of several thin Crusts, one within another, all striated from the Surface towards a Line placed near one side of the Body, as in the lesser end of the former. Found in *Clipston-Quarry*, *Northamptonshire*.

\*d. 21. Another Piece, broken long-ways, so as to shew the Line above mention'd in N<sup>o</sup> 19, & 20. running the whole length of the Body, placed, not in the middle, but pretty near one side of it. *Ibid.*

\*d. 22. Another, the Cavity of which is fill'd with a grey sort of Sand-Stone, of the same sort with that of the Stratum, in which the Body was originally lodg'd. This is made up of several thin Crufts, striated a-croſs, towards the middle of it: On one side it appears as if worn or ground away, so that several of the Crufts are visible one within another for the whole length of the Stone. It happens in two or three places to be broken cross the Grain of the *Stria*, and appears there flaky, not unlike a sort of Talky Spar. I found in the same Stratum several whose Cavities were fill'd with the same sort of Stone. *Birlip-Hill, Gloucestershire.*

\*d. 23. A Mass of the Stone of the Stratum above mention'd, with a Piece of a *Belemnites* in it, broken so as to shew a Cone of the same sort of Stone lodg'd in its Cavity. There is on the same Stone an Impress of part of a sort of Bivalve.

\*d. 24. Another Mass of a greyish Stone mix'd with a Spar; and having in it numerous Fragments of Sea-shells. There is lodg'd in it a Piece of a *Belemnites*, whose Cavity is fill'd with the same sort of Stone. From a Stratum of Stone in Sir *Ralph Dutton's* Home-Park at *Sherburn* in *Gloucestershire*. In this Country the Farriers use the *Belemnites*, finely powder'd, in watery Affections of the Eyes of Horses. The common Pharmacologists recommend it inwardly in Nephritic Cases; and doubtless it has much the same Properties with Spar. *Vide infra* f. 21. Cl. p. 2.

\*d. 25. A *Belemnites*, broken so as to shew the interior Texture of it. 'Tis striated at the small end towards the Axis of the Stone. Its conical Cavity is fill'd up with a white semi-pellucid Spar. This Spar consists of several Joints, each about  $\frac{1}{2}$  of an Inch in thickness. On the broader Surface they are concave; on the other convex; so as they fit and joint close to each other, growing still less and less, till they end with a very small one at the Point of the Cone. *Norleach, Gloucestershire.*

\*d. 26. Another, broken so as to shew a like articulated Cone, but of a coarser Spar. *Coln-Allins, Gloucestershire.*

\*d. 27. Five Pieces of other like jointed Cones, taken out of the Cavities of *Belemnites*. From ----- *Northamptonshire.*

\*d. 28. Three other like Pieces; the two larger found in the blue Clay got out of the Canal of the Earl of *Montague* at *Boughton*, *Northamptonshire*: the least from *Clipston-Quarry*. Mr. *Morton*.

\*d. 29. A Piece of a *Belemnites*. The conic Cavity, at one end, is fill'd with a grey Talky Spar, at the other with a blueish Stone, in which is infix'd a small Plate of *Selenites*. *Clipston, Northamptonshire.*

\*d. 30.

\* d. 30. Another, in which the Cone, filling the conic Cavity, consists of Joints of a yellow Brass-like *Pyrites*. The *Belemnites* is of a blackish Colour, and a Conick Shape, and is striated from the Surface towards the Middle. Found lodg'd in the Alum-Stone at *Whitby, Yorkshire*.

\* d. 31. Another out of the Stone too, of the same Shape and Colour, and striated in like manner, but appearing to be made up of several thin Crusts set one within another, and surrounding the Cone. The Joints of the Cone, filling the Cavity, are of a grey Talky Spar, with a slight Admixture of *Pyrites*.

\* d. 32. Six Joints each gradually less than the other. The biggest is very large, being about  $1\frac{1}{2}$  Inch in Diameter. They approach an oval Figure, and consist of a hard grey Clay, with some very small shining Sparks, seeming to be of Talc. Both their concave and convex Surfaces are very polite, and in some Places have a shining Armature upon 'em, like that frequently observable on *Cornua Ammonis* and other Shells that have lain in a vitriolic Earth: and in some Places there appears a little quantity of a *Pyrites* adhering to them. At *Great-Bowden* in *Leicestershire*, Mr. Bland.

\* d. 32 x. Several Joints, near 20, of much the same Size with the foregoing. *Ashley, Northamptonshire*. Mr. Sawyer.

\* d. 33. A single Joint of much the like Size and Shape with d. 32. sent also by the same Person, Mr. Bland, from the same Place, *Bowden*. The Clay of it is of a like sort with that of the former; the convex side is polite, and plainly appears to be covered with a thin Crust about  $\frac{1}{30}$  of an Inch thick. What these Bodies are, is not easy to determine; particularly whether Joints of the Cone contain'd in some very large *Belemnites*. Mr. Bland informs me he has seen Systems of these of a Conical Figure, and ending in a small Joint or Point; but he never saw any part of a *Belemnites* adhering to 'em. Be that as it will, they are found elsewhere, filling the Conic Cavities of *Belemnites*. Conf. \* d. 25. *supra*, & \* d. 39. *infra*.

\* d. 34. A small *Belemnites*, differing in Shape from any of the former. 'Tis  $1\frac{1}{2}$  Inch in Length, and  $\frac{3}{10}$  of an Inch in Diameter, where thickest. It terminates at one End in a bluntish Point, from whence it gradually swells to about  $\frac{2}{3}$  part of the Length, thence gradually lessening for  $\frac{1}{3}$  more, till its Diameter be little more than  $\frac{1}{10}$  of an Inch, which thickness it holds to the other End, only swelling a little at the very Extremity where it is hollow, but the Crust very thin. 'Tis a little broken in one part, and appears to be striated toward an Axis, in the same manner as the rest. In the thicker part 'tis of a dark grey Colour; in the thinner of a somewhat lighter. There is a small Chap or Seam running the whole Length of it, but is most conspicuous at the thinner End. This is of that sort which *J. Bauhinus* in his *Treatise de Fonte Bollenfi*, p. 34. calls *Belemnites fusi instar ventre crassiore, in acumen utrinque desinente*. Found in a Stone-Pit at *Stunsfield*

field in Oxfordshire. This Species of *Belemnites* is also found about Zurich in Switzerland. *J. Scheuchzer Spec. Lithogr. Helvet. p. 25.*

\* *d.* 34 x. Another of the same kind, found along with \* *d.* 42.

\* *d.* 35. Another, in nothing different from \* *d.* 34. only somewhat leis, and found in the same Place. \* *d.* 9. 10. 12. *supra* are of this Species.

\* *d.* 36. A Piece of a larger of the same sort. In the thickest part 'tis  $\frac{7}{8}$  of an Inch in Diameter. 'Tis broke about the middle, where it is solid throughout, and striated from the Surface across two thin Crusts to the Axis. From still the same Stone-Pit.

\* *d.* 36 x. Another, dug up in a Tile Clay-Pit, near Thurnham, 3 Miles from Maidstone in Kent.

\* *d.* 37. A Conic *Belemnites*, near 4 Inches in length. 'Tis rough on one Side, and looks as if grated and worn away; glistening there likewise in small Spangles not unlike one of the *Mica*. Being broke at the bigger End, it discovers itself to be compos'd of transverse Fibres. The Conical Cavity is filled partly with a black shining glossy Matter, and partly with a white, much resembling a coarse Spar. In *Whitby Alum-Mines, Yorkshire*.

\* *d.* 38. Another of much the same Size, Shape and Texture. This is flat at the bigger End, and crack'd as if compress'd by some external Force, though the Pariax or Sides are not brought so near together but that some of the Conic Cavity remains, and is filled with the common grey Alum-Mineral. On one part, where broken, the Fibres appear with a shining brassy Gloss, like a *Pyrites*, but it seems to be only superficial. From the same Mines.

\* *d.* 39. A Piece, broke off from the bigger End of another, of like Size. The Conic Cavity of this is filled with a greyish Matter made up of several Joints as that \* *d.* 25. Both the Concave and Convex Surfaces of the Joints are very smooth and shining. *Whitby Alum-Mines*.

\* *d.* 40. A *Belemnites fusiformis*, about an Inch long, somewhat Diaphanous, and of the Colour of Amber. When held up to the light, a Slit or Crack discovers itself passing streight on for the whole length of it. It appears to be compos'd of many very thin Crusts. Found lodged in a blue Clay in a large Cliff near *Spitton* in *Yorkshire*, where there are great Numbers of them. This is very firm and hard, but some of them are so friable that they will crumble betwixt one's Fingers. The Crack above-mention'd is frequent both in this, and the common *Belemnites*, of which there are Instances in \* *d.* 2. 3. 6. 8. 9. 10. 11. 13. 14. 16. 17. 18. 22. In several of these the Crack is visible from the Axis of the Stone, quite to the Surface. The Seam, or Sulcus, in the *Belemnites* \* *d.* 43. *infra*. and the *fusiformes* \* 34 *supr.* & *seq.* is wholly external, so far as appears, and quite different from these Cracks.



\* d. 41. A *Belemnites* from *Scarborough Shore*, worn and fretted by the agitation of the Sea, and having in its Surface several small oblong Cavities, appearing as if corroded by Worms.

\* d. 42. A *Belemnites*, little different from that \* d. 14. Out of a Clay-Pit at *Hannington* in *Wiltshire*, where they are found in great numbers.

\* d. 43. Part of a *Belemnites* broken to shew the interior Texture of it. The Fibres or Striæ tend all to the Axis, about which the Circles appear very plain; and at one End is a brown stoney Matter in the middle, which is surrounded with a Circle of white sparry Matter, and that with a Circle of blackish horney Matter. This shews the Manner of the Formation of the Body, and the successive Application of the Constituent Matter. There's a Seam or Sulcus runs down one Side of this Body for the whole Length of it. *Silverton, Devonshire*. There were several of them; all of this, which is the common sort, conic, and terminating at one End in a Point.

\* d. 44. Parts of two more, of the same sort, from the same Place, crack'd and inflected, but cemented at the Cracks, and held together by interposition of a stoney Cement.

\* d. 45. Four *Belemnites*, each an Inch and  $\frac{3}{4}$  in Length, and  $\frac{1}{4}$  of an Inch in Diameter, where thickest, which is not in the Middle, but rather towards one End. That End terminates in a Point like that of \* d. 1. 2. 3. and of those \* d. 46. which makes me suspect all those to be of the same sort with these, tho' that cannot be ascertain'd, because in all those one End is broken off. But they are of the same Colour and Constitution with these, and were found in the same Places, viz. the Chalk-Pits of *Greenhythe* and *Northfleet, Kent*. What is observable in these, is, that they terminate at the opposite End likewise in a Point, little different from that of the other End, only the Body is smooth on that End, and on this 'tis set with Ridges round the Point. As to the interior Constitution of these, they are striated from the Axis to the Center, and are composed of several Crusts, including one another like the other common *Belemnites*, which appear to be all broken, and we find only Pieces of them. 'Tis not improbable but, when they are whole, they terminate in a Point at each End as these do. I observed *Belemnites* of this Species in the great Chalk-Pit, on the S. E. of *Croydon, Surrey*.

\* d. 46. Two *Belemnites* like those \* d. 1. & 2. but bigger. Found in a Chalk-Pit near *Northfleet, Kent*.

## Introduction to CLASS V.

## Of the Marine Corals,

PART 1. Of the Nature and Constitution of the marine Corals.

C. 1. The Specific Gravity of the several kinds of marine Corals;

——— of the *Antipathes*, or Black Coral.

——— of the red Coral.

——— of the white Coral.

——— of the ramose *Porus*.

——— of the corallin *Astroites*.

——— of the corallin *Mycetites*.

C. 2. Chymical Tryals of the several kinds of marine Corals.

C. 3. Of the Constituent Matter of the marine Corals.

Crystall Spar; is a constant and certain Ingredient of the marine Corals, and there is some small quantity of it in all of them.

The different Constitutions, Forms and Colours, of the several kinds of Corals, are owing to the Admixture and Incorporating of various sorts of earthy, stoney and mineral Matter, with the Crystallin, in the Formation of them.

There is, besides the mineral, an Admixture of a fibrous Vegetable Matter, more or less, in the Composition of most marine Corals.

APPEND. The various submarine Shrubs are of a corneous, or ligneous Constitution, consisting chiefly of a fibrous Matter. Otherwise they carry externally somewhat of the Face and Appearance of the Corallin Shrubs. They are also affix'd, like them, to the Stones or other Bodies upon which they grow, by a Pedicle: and have not Roots, as the Shrubs at Land have.

C. 4. A Collation of the marine Corals, with the several kinds of Spar.

The Constituent Matter of Coral and of Spar compared.

The interior Texture of Coral and Spar compared.

The Colour of the several sorts of Coral and Spar compared.

PART 2. Of the Forms of the marine Corals, and a Collation of them with the various Forms of Spar, and of some other Minerals.

C. 1. Of the Corallin and Sparry *Astroites*.

C. 2. Of the Corallin, Sparry and Mineral *Mycetites*, e. 47. 48.

C. 3. The fistulose Sparry *Stalactites* compared with the Corallin *Pori*.

APPEND. Of the native Iron *Stalactites*; and the Brush-Iron-Ore.

o. 22. & seq. Of the florid Iron-Ore. o. 28. 85. & seq.

- C. 4. The florid and ramose Corals compared with the florid and ramose Spars that are form'd by the meer Act on of the Water in the perpendicular Fissures of the Strata. See the Spars, N<sup>o</sup> f. 44. 68. 69.\* 83.

APPEND. Of the Capillary, and Arboreſcent Silver, and the Arboreſcent-Iron. o. 85. found in the Metallic Veins and Fissures.

- C. 5. Of a very elegant Spar found in the perpendicular Fissures of the Lead-Mines of *Arkendale*, that very nearly approaches the Shape of *Erica* or Heath.

PART 3. Of the Manner and Posture in which the Marine Corals grow, and are affix'd to the Rocks.

- C. 1. Of those that are found erect.

- C. 2. Of those that are protended horizontally.

- C. 3. Of those that are found hanging down from the Jets of the Rocks, like the Sparry *Stalactites*, in which manner the far greatest Part of Corals are found. *Conf. Raij Hist. Plant. Tom. 1. p. 61. d.* and Mr. *Willoughby's Voyage thorough Spain. p. 466.*

PART 4. Instances of several other Bodies that resemble some kinds of Corals in Figure; and may serve to illustrate and clear up the Natural History of them.

- C. 1. Of the Silver-Tree of the Alchymists, and other like Concretions of Metallic and Mineral Bodies in the Menstrua where-in they had been dissolved. *Conf. Epist. D. P. Guisony ad P. Boccon. Recherches & Obs. Nat. p. 19. Conf. Chymie de Lermery, Part 1. c. 2. p. 104. Mem. de l'Acad. des Sciences. 1692. p. 145.*

- C. 2. Of the Stellar Shootings upon the Surface of the Regulus of Antimony, as it becomes cool, after Fusion.

- C. 3. Of the Ramose and Stellar Sketches upon the Mocho-Stones.

- C. 4. Of the *Dendrite*, or Delineations of Trees, Shrubs, and ramose Figures, made by mineral Steams, on Flints, Marble, Stone, Slate, and various other Fossils. *Vide Mantiss. 1. infr.*

- C. 5. Of the ramose Concretions of the volatile Salts, observable upon the Glass of the Receiver, whilst the Spirits of Vipers, Harts-horn, and other like Spirits are drawn; especially if the Operation be gentle and slow.

- C. 6. Of the fuliginous Matter form'd, by the Drift of the Air, into the Shape of a Species of marine Lichen, in Creeks of Chimneys, Stoves, Forges and Furnaces, where there are Fires kept for a considerable Time, and much Fuel spent.

APPEND. Of fuliginous tuberous Bodies resembling Mulberrys, form'd accidentally in great Coffee-Houses. *Addit. Eng. Foss. N<sup>o</sup> 300.*

- C. 7. Of Snow affix'd, in ramose Figures, on Trees and other stable Bodies, by means of the Wind, or Drift of the Air.

- C. 8. Of the various Stellar Figures of Snow. *Conf. Mem. de l'Acad. des Sciences. An. 1692. p. 32.*

- C. 9. Of the Ramose and Stellar Figures of the *Pruina*, commonly observable on the Outside of the Glass of Windows, during Hore-Frosts.
- C. 10. Of the Ramose, Stellar and other Figures, observable in Water, and other Liquors, frozen.
- C. 11. Of the Ramose Figures form'd by a sudden Parting of the Stones used in grinding and preparing of Glass-Eyes, Pearl, Coral, and other like Bodies for Medical Use.
- C. 12. Of the Ramose Figures form'd by the terrestrial Matter left, upon the Evaporation of a small Quantity of muddy Water diffused, very thin, upon any polise Surface

PART 5. Of the Origin and Formation of the Marine Corals.

- C. 1. The Fund and Source of the Corallin Matter.

The Earth is the Promptuary of the Corallin Matter, it being originally derived from the Rocks, the Cliffs, the Shores and Shallows. \*

It is distributed and lodged in the Earth with great uncertainty, some Shores abounding with it, and others having little or none.

The Corallin Matter is likewise very various, that repositied in one Cliff being frequently unlike that of another.

Nay, that in the same Cliff is sometimes very various; and that which is lodg'd in the upper Parts, differs in Kind, in Constitution, in Colour, and in Mixtures, from that which is below.

- C. 2. Of the Agent that educes forth the Corallin Matter, distributes and disposes of it.

This is the Water of the Sea which washes and drains it out of its Fund, assumes it up into itself, conveys it to the Place of its Formation, and deposits it there.

At such time as the Sea is agitated, and in Emotion, it takes up into itself Terrestrial Matter of all kinds, and in particular the Corallin Matter, depositing and letting it fall again, as it becomes more quiet and calm.

The Promontories and Jets of the Shores being chiefly exposed to the Action of the Sea and Storms, the greater Part of the Corallin Matter is, by that means, beaten off from them, and is again precipitated, and the Corals form'd out of it in Creeks, Bays, the Bottoms of the deeper Seas, and such other Parts as are quiet, still, and shelter'd from those Emotions.

In the greater and more violent Storms, the Sea being forced and cast up to the higher Parts of the Rocks and Cliffs,

\* The Bottom of the Sea, at greater Depths, being not affected, or Earthy Matter raised from it, in the most boisterous Storms. Vide Nat. Hist. of the Earth, 2d Edit. p. 25. 26.



draws thence frequently Matter very different from that which is repositied in the lower Parts of them; which is only what it was wont to draw forth during Tides, and the lesser and more common Agitations.

The Number and the Bigness of the Corals on any Shores, is in Proportion to the Quantity of the Corallin Matter thereabouts, and to the Intensity and Agitations of the Seas.

C. 3. Of the Modulation and Composure of the various Corallin Bodies.

When the Sea-Water, charg'd and impregnated with the Corallin Particles, becomes, after Storms and Emotions, again calm and quiet, it lets fall those Particles, depositing and affixing them upon the Rocks, Stones, Shells, Sea-Shrubs, the Corals before extant, and such other stable Bodies that happen to be near and present.

This it has done in all Ages, does at this Day, and will continue to do so as long as the Sea shall continue to work and beat off Matter from the Cliffs and Shores, to remove and transpose it from Place to Place.

The Coral found affix'd and growing upon wreck'd Ships, lost Anchors, and various other artificial Bodies, that are daily dragg'd up out of the Sea, affords a Demonstration that Coral continues to be form'd to this Day, and shews likewise in what Quantity and Proportion it is produced.

Where the Corallin Matter, in the same Cliff, is chiefly uniform and of the same kind, the Corals form'd out of it are so too. Where 'tis various, they vary as much, and there are Bodies of different Tenor and Complexion, found together in the same place. Nay where it so happens that the Matter repositied in the upper Parts of the Cliffs differs from that below, and is not drawn forth commonly as that is, but only in the greater Storms, when the Sea is cast up to those Heights, the Corallin Bodies form'd in those Parts are variegated. Sometimes a distinct Sprig of Red is form'd on a Shrub of white Coral, or a Crust of Red cast upon a Sprig of White, with several other like Varieties.

The Corallin Matter is found either, 1<sup>o</sup>, only simply precipitated in likeness of a Sediment; or 2<sup>o</sup>, concreted upon Stones, Shells, and Sea-Shrubs, after the manner of an Incrustation; or else 3<sup>o</sup>, it is form'd into regular and observable Figures, such as are the Corallin Shrubs, the Pori, Astroitzæ, and Mycetitzæ.

The first sort nearly approaches the Plates of Spar, found concreted upon the Stones of the Sides of the Perpendicular Fissures of the Strata. *vid.* Class vi. Part iii. § 1.

The second sort, or the Corallin Incrustations are, in all respects, like the Incrustations of some sorts of Spar upon Bodies in the Sources of Springs and Rivulets, there being none the least difference betwixt them either in the Nature of the Matter of each, the Colour of it, or in its Texture and Disposition. *vid.* Cl. vi. Part 1.

'As these two sorts of Coral agree exactly with the plated and incrusted Spar in Constitution, so do they likewise in the Process of their Formation. *Vid. Cl. vi.*

The Corals of the third Rank are generally composed of a Matter much finer than that of the two former. The Parts are also more close, firm and compact: nor are these of a Constitution near so simple as those are, but shew throughout something more regular and observable, as well in their interior Texture as in their external Figure.

As has been noted of the two former, so there are Spars that both in Texture and Figure, very nearly resemble the Corals of this Rank: and not only Spars, but several other Mineral and Metallic Bodies.

Of this, to pass by all the rest, the Heath-like Spar and the Arborefcient Iron-Ore, o. 85. and the Arborefcient Silver are illustrious Instances. These carry not only a Resemblance of some of the Ramose Corals, but have something in their Frame and Shape, as curious and artful as any of them all.

So likewise the flinty and sparry *Astroita* are, in all respects, as remarkable and extraordinary as the marine.

And there are *Pyrita* that agree exactly both in their outward Shape, and their interior Constitution, with the Corallin *Mycetita*. *Vid. c. 47. 48. infra.*

Other *Pyrita* there are of the very same Figure, Texture and Compages with the *Astroites corallinus undulatus* of P. Boccone. *Recherches & Obs. Nat. p. 141.* which is indeed the most admirable of any in all the whole Tribe of Marine Corals. *Vid. b. 20. 32. 41.*

As these Bodies, both Fossil and Marine, agree in their Texture and Composition, as well internal as external; so do they likewise in the whole Series, Process and Method of their Formation.

The constituent Particles of both are originally derived from the Earth, by the Motion of Water; and are by little and little precipitated again, upon the Cessation of that Motion.

And for the Structure of both the Mineral and Corallin Bodies, 'tis merely the Result, partly of the Figure and Disposition \* of the Particles, of which the several sorts of those Bodies are composed: and partly of the Motion and Modulation of the Parts of the Water, wherein the separate Particles were sustained.

\* Which likewise is the Case of the Ramose, Fuliginous, Snowy and Pruinose Bodies; with this only Difference, that the Air or Atmosphere was the Vehicle of the separate Corpuscles of these, as the Water was of those.

The uliginous lacteous Matter, taken notice of by that diligent and ingenious Botanist *P. Boccone* †, in the Coral Fishings upon the Coast of *Italy*, was only a Collection of the Corallin Particles thus sustained in the Sea Water, hovering about and applying it self to the Corallin Shrubs and Pori, for their Growth and Enlargement. The Acrimony, he observed in tasting of it, arose from an Admixture of the Sea-Salt; which, in Bodies taken forth of the Sea, is not to be avoided. Indeed some Tryals I have made, have taught me that 'tis not excluded even from the Corallin Bodies themselves, there being some admixture of it incorporated with the Corallin Matter in their Constitution.

This is what some Writers, that are very fancyful, but not over happy in their Fancies and Opinions, call the Seed of Coral ‡, And it must be allow'd in favour of their Notion, that this is the very Matter out of which the Corals are raised and composed, how little Analogy soever it may carry to Seed.

And this || likewise was, I suppose, what run in the Head of a late Writer of Natural History, (who 'tis agreed on all hands, is not wont to have the most lucky Hits of any Man living, in the Conduct of his Thoughts) when he diverted himself so much with the Speculation of the *Seed of Coral*; and, as for more sureness he repeats it, the *Sperme of Coral*, which he imagined he had so often seen. Only he quite mistook the matter, and unfortunately lit upon what was as foreign to it as well could be, what has nothing of a Corallin Nature in it, nor any the least Concern in the Formation of Coral. For that *pellucid* gelatinous \* Substance, which he pitches upon with so great Reliance and Positiveness ††, is chiefly of Animal Constitution, and no other than an Excrement cast off from the numerous Shoals of Fish that inhabit the Main. This is flung upon some Coasts || in far greater Plenty than others by the Drift and Bearing in of the Sea upon

† *Recherches & Observat. Nat. l. 2. p. 8. As also S. Cesloni. Mem. de l'Acad. des Sciences. 1700. p. 35.*

‡ *As others do the separate loose Metallic and Mineral Corpuscles, brought by the Water into the Veins, for the Compilation of the Ore there, the Seeds of Metals and Minerals. See Nat. Hist. of the Earth, 2d Edit. p. 216. 217.*

|| *As also what Dr. Tournefort has noted about this Substance, Mem. de l'Acad. des Sciences 1700 p. 29. & 35.*

\* *For such it is, and not mucilaginous, as he styles it.*

†† *Lithophyta—è Semine ortum habent—eorum Sperma persapa videt,--mucilaginosum, crystalli instar pellucidum, ejusdem cum Lapidibus figura, &c. D. Sloan ap. J. Rajum, in Hist. Plant. To. 3. P. 5.*

|| *As I remember one Sort of it is called Sea-blubber in some parts of England.*

them. 'Tis indeed true there are sometimes found Corallin Particles implicated in this ; but that is merely accidental, and Fragments of Shells, Sand, Ouze, and the other Recrements of the Sea, are much more commonly observed to be intangled in it. At such time as the Sea is in any unusual Emotion, this floats; when that is calm, it sinks to the Bottom, and alights upon the Shells, Flints, and all other Bodies there promiscuously. Amongst the rest, if there be Coral, it frequently happens to settle down upon that, and being of a Disposition very flexible, it readily plies and conforms itself to the Surface of the Coral, and so receives and assumes the *Figure* of it. This was what chiefly amused and misled this Writer; which yet is no more than what it does indifferently to all the Bodies it chances to light upon, and he might, with equal Reason, have concluded that it was the Seed of the Shells, the Flints, and the other Bodies that 'tis much more commonly found shaped to, and lodg'd upon, as of the Coral. But nothing more need be offer'd to evince upon how slight a Foundation this Notion stands, than that 'tis certain Matter of Fact that there are Corals found in great Plenty and Variety in Places, where little or none of this gelatinous Substance, which he has pitch'd upon for the Origin and Rudiments of all Corals, ever appears; and it occurs frequently and in abundance, in Seas where not so much as one single Sprig of Coral is any where to be met with.

#### APPEND. 1. *The Effects of great Storms upon Coral.*

Those Creeks, Bays, and other Parts of the Sea where Corals are form'd, tho' generally calm, and free from Disturbance, at some Times, and particularly when Hurricanes happen, and Storms that are more than usually Violent, are put into Emotions so great as to break and tear up the Coral again, and to dash and beat to pieces the Bodies that were form'd in the Calms and the Intervals of those Commotions.

#### APPEND. 2. *Of the Coral Fishery.*

The chief Place for the Coral-Fishery is upon the Coasts of *Sardinia* and *Corfica*: the next upon the North Coast of *Sicily*: then upon the Coasts of *Barbary*, near *Tunis*: towards the Isle of *Tabarca*; upon the Coasts of *Catalonia*, chiefly at *Catache*, where the Coral is of the deepest Red, and so, the finest, of any Part of the World, but 'tis small, and frequently eroded and perforated by Worms. 'Tis also found under *Monte Nero*, and indeed upon the whole Coast near *Leghorn*; tho' 'tis there also small, and therefore not so much valued. They drag up Black-Coral, and *Fistularia purp. Fer Imperati*, sometimes, with the Red; and also the White that is firm and polite: and of that which the *Pescadori* call *Ravano*, which is the white Porus of several Species, which they slight and sling away.



APPEND. 3. *Experiments of the Nature and Constitution of red Coral.*

A Pound of red Coral being powder'd and distill'd, *per se*, in *Arena*, I found betwixt 20 and 30 gr. of a fetid Oil, of a deep red Colour in the Neck of the Retort. Besides the Oil, there came over into the Receiver, a Phlegma, attended with a volatile Acid. This Acid, by Digestion, was reduc'd to a volatile Salt, differing no other ways from that of Amber, than in its wanting of the flight bituminous Flavour which that has. The Oil, like other fetid Oils, dissolv'd in Spirit of Wine. It approach'd the Nature of the vegetable Oyls, but the most nearly that of Tartar, in Smell, Consistence, and all other Respects. This shews there is something of a Vegetable Nature in red Coral: but probably not in such Proportion to the crytallin or stoney, as to have held that together, and secur'd it from Dissolution at the Time of the Deluge, when all other stoney and mineral Bodies were dissolv'd.

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## CLASS V.

### *Fossil Corals, and Coralloid Bodies.*

#### *The Classical Distribution of these Bodies.*

#### PART 1. Coralloid Bodies that are ramose or branch'd.

- Sect. 1. The branch'd Coralloid Bodies that have the Surface smooth.
2. Those that have the Surface reticulated.
3. Those that have the Surface starr'd.
4. Those that have Striæ passing from the Surface to the Axis.

#### PART 2. Coralloid Bodies that are of a cylindric Shape.

- Sect. 1. The Cylindric Coralloid Bodies that are composed of Plates, set lengthways of the Body, and passing from the Surface to the Axis of it.
2. Those that are tubular, but intercepted at certain Intervals by Diaphragms, or transverse Plates.

#### PART 3. Coralloid Bodies oblong, and in Shape of Columns with five Sides.

- Sect. 1. The Pentaedrous Columnar Coralloid Bodies that are compos'd of Plates set lengthways of the Body, and passing from the Surface to the Axis of it.
2. Those that are intercepted, at certain Intervals, by Diaphragms, or transverse Plates.

PART 4. *Mycetita*, or Coralloid Bodies in Shape of Mushrooms.Sect. 1. The *Mycetita* that are of a Conic Figure.2. The *Mycetita* that are of a Discoid or flat Figure.PART 5. The *Astroita*, or starred Coralloid Bodies.Sect. 1. The *Astroita*, that have the Stars prominent, or rais'd.2. Those that have the Stars delineated in *Plano*.

3. Those that have the Stars depreſs'd.

4. Those that are perforated or hollow'd.

## E X T R A C T.

## C. 1. The Names given to some of the Fossil Corals.

Shrubby or branched Corals, some white and others grey. e. 1.

*Corallium nigrum*, S. *Antipathes*. J. B. C. P. e. 2.*Porus Coralloides*, very beautiful, perfect, and as to its Texture little different from the marine; lodg'd in Black Marble. x b. 62.*Tubularia Fer. Imperati*. e. 4.*Stelechites*. e. 13.*Funci Lapidei*. e. 22 x. [These are found in an erect Posture: as also the *Helsfield* Cylindrick *Coralloides*. e. 17. e. 18.*Mycetita Coralloides*, or Mushroom-Stones. e. 47. & seq. e. 54. 60. 62.*Porpites*. e. 68.

Honey-Comb Stone. e. 112.

Starr'd Honey-Comb Stone. e. 43.

*Astroites*. e. 84. & seq. 97.*Astroites coralloides undulatus*, or the Brain-Stone. e. 87.

## C. 2. The several Places where the Coralloid Bodies are found.

*Greenwich*, e. 80. 81.*Croydon, Surrey*. e. 12 x.*Purfleet*. e. 47. & seq.*Norfleet*. e. 65. 67.*Sheppey Island*. e. 47. 48.Near *Oxford*. e. 56. 57. 61. 84. & seq. 107. 110. 114.*Oxfordshire*, &c. e. 68.*Bullington-Green, Oxford*. e. 117.*Shotover-Hill* near *Oxford*. e. 85. 105. 106.*Abbington, Berkshire*. e. 116.*Harborough, Leicestershire*. e. 12.From . . . *Wiltshire*. e. 41. 42.*Broadwell, Gloucestershire*. e. 74.*Sherburn, Gloucestershire*. e. 14. 83. 96. 88. 104.*Yanworth-Fields, Gloucestershire*. e. 86. 98.*Wheatland's-Mill, Gloucestershire*. e. 54. 87. 91.*Stowell, Gloucestershire*. e. 97.*Norleach, Gloucestershire*. e. 92.

- Wakerly, Northamptonshire. e. 10.*  
*Artleborrow, Northamptonshire. e. 93. 94. 95.*  
*The Earl of Dyfert's Yard.*  
*Northamptonshire. e. 100. & seq.*  
*Near Bristol. e. 112.*  
*St. Vincent's Rock. e. 62. 63. 64.*  
*Wales. p. 42. x b. 62.*  
*Landidno, Caernarvanshire. e. 16.*  
*Brecknockshire. e. 20 x.*  
*Whitton. e. 74. 75. 109.*  
*Shores near Skegness, Lincolnshire. e. 22. 26. 27. 32. 34. 36. & seq.*  
*Dudley, Staffordshire. e. 5. & seq. 15. 44. 45. 46. 55. 60. 82.*  
*Shores near Sunderland. e. 3. 23. 24. 31.*  
*Scarborough, Yorkshire. e. 28. 66. 108.*  
*Outhorn, Yorkshire. e. 25. 35.*  
*Paul, Yorkshire. e. 29.*  
*Near Leeds, Yorkshire. e. 40.*  
*Hilden, Yorkshire. e. 89.*  
*Sedberg, Yorkshire. e. 4.*  
*Hackness-Head, Yorkshire. e. 19.*  
*----- Cumberland. 34†. 90.*  
*Leonard's Castle-Abbey, Cumberland. e. 113.*  
*Betwixt Carlisle and Cockermouth. e. 22 x. 22 †.*  
*How-Lees, Cumberland. e. 51. 52. 53.*  
*Torpenho, Cumberland. e. 13. 50.*  
*Helfield, Cumberland. e. 17. 18.*  
*Kendal, Westmorland. e. 20. 50.*  
*Potgill, Westmorland. e. 34 x.*  
*Tripland, Westmorland. e. 30.*  
*Eynsham, Oxfordshire. e. 1. 69.*  
*Windrush, Gloucestershire. e. 2.*  
*Mynehead, Somersetshire. e. 21.*  
*Shotover-Hill. e. 58.*  
*Aulsfworth, Gloucestershire. e. 71. 103.*  
*Rislington, Oxfordshire. e. 72. 73.*  
*Coln St. Allens, Gloucestershire. e. 97.*  
*Farmington, Gloucestershire. e. 99.*

**C. 3.** The various Sorts of terrestrial Matter, in which the Coralloid Bodies are found repositied.

- In a blue Clay, e. 58. 59.*  
*In Chalk, e. 47. & seq. 65. 67. 80. 81.*  
*In Gravel, e. 13.*  
*In a whitish Stone, e. 10.*  
*In a brown Sand-Stone, e. 17. 18. 30. 40. 83. 86.*  
*In a brown Stone of a finer Grain, e. 21. 23. 26. 31. 36. 37.*  
*In a pale brown Stone. e. 19.*

In a grey Stone, *e. 3. 11. 20 x. 22. 22†. 24. 25. 29. 32. 34 x. 34†.*  
*38. 84. 85. 114.*

In an Iron-colour'd Stone, *e. 35.*

In a blackish Stone, *e. 22. 29.*

In black Marble, *x b. 62. e. 27. 28.*

In a grey semi-pellucid Flint, *e. 41. 42. 43.*

In a brown Flint, *e. 20. 39.*

#### C. 4. Of the Nature and Constitution of the Fossil Corals.

##### §. 1. The Specific Gravity of the several Kinds of Fossil Corals.

———— of the Antipathes, or black Coral.

———— of the red Coral.

———— of the white Coral.

———— of the ramose Porus.

———— of the coralloid Astroites.

———— of the coralloid Mycetites.

##### § 2. Chymical Tryals of the several Kinds of Fossil Corals.

##### § 3. Of the constituent Matter of the Fossil Corals.

As in the Marine, so likewise in the Fossil Corals, there is constantly Crystal; but very much less in the former than in the latter. *e. 93.*

With the Crystal also are incorporated various sorts of Earthy, Stoney, and Mineral Matter; to which the Fossil Corals owe the Difference in their Constitutions, Forms, and Colours.

The fossil Corals never have in them any thing of fibrous, or vegetable Nature; which most of the marine Corals have: tho' many of them very little. *Confer. Append. 3. to the Extract of the Account of the marine Corals.*

And the common constituent terrestrial Matter, incorporated with the crystalline in the fossil Corals, is different from that in the marine. *Vid. e. 69. 93. 97. 105. & seq.*

##### § 4. Many of the fossil Corals consist of the Matter of the Flint; or Agat. *e. 41. & seq.*

##### § 5. Others of them consist of the Matter of the Pyrites. *e. 47. 48. and b. 4. 20. 41.*

#### C. 5. Of the Origin and Formation of the Fossil Corals.

They are found, repositd in the Strata of Earth, Chalk, Stone, Marble, and the like, (*Conf. C. 3. supra*) along with the Pellicles of Ova of Fishes, and Sea-shells of all kinds. *e. 10. & seq. 84.*

Consequently they must have been form'd before ever the Strata were compil'd, or had attain'd their Solidity.

They are apparently all referable to the Nodule-kind; and were form'd at the Deluge, as all other † Nodules were. *e. 1. 86.*



At that time all terrestrial Bodies, and in particular Crystal, Spar, and Corals, were in a State of Solution; and the Principles, or constituent Particles of them, sustain'd in the watry || Mass. *e. 1.*

After some time, those Particles, uniting and combining into Masses, compos'd the Metallic, Mineral, Sparry, and Coralloid Nodules.

And, there being sustain'd, in the same Fluid, Teeth and Bones of Fishes, Shells, and other marine Bodies of all kinds, the metallic and mineral Particles frequently affix'd and concreted upon them. Accordingly there are commonly found Flint, Ores of Metals, and Minerals, adhering to the fossil Shells‡. In like manner there are found of the various kinds of fossil Corals actually adhering to the Shells dug up at Land; and some of them, particularly the *Mycetita*, have Pedicles, and are affix'd to Shells in much the same manner that those found at Sea usually are. *e. 1. 10. 11. 33. 49.*

As sometimes Bodies of different kinds join'd in the same Nodule: and in particular the Pyrites, Sparry, and other Mineral Matter, grew to Flint; so likewise there are Instances of the Fossil Corals united to Flints.

In Conclusion, the Nodules of all kinds, and particularly the Coralloids, settling down, with the earthy, chalky, stoney, and other terrestrial Matter, were reposit'd in the Strata which that Matter compos'd †; in which they are at this day found reposit'd. *e. 1.*

#### C. 6. Of the Modulation, and Composition of the various fossil Corals.

As there is an agreement of many of the fossil Corals with the marine, in Texture, and in Form; and both were once in the same condition, the Particles separate, and sustain'd in Water, those at the Deluge||, and these in the Sea; so each owe their Formation to the same Cause, the Motion and Action of the Water, and the Figure and Disposition of the Particles that constitute them.

Of the Formation of the starr'd Flints. *e. 43 x.*

APPENDIX I. Concerning the Reason why the Sea-shells, and other animal and vegetable Bodies then in being, were not dissolv'd, at the Deluge, as well as the Corals, and all Fossils,

From what has been deliver'd, above, 'tis sufficiently clear that the marine, as well as the fossil Corals, had in them something of

|| *Nat. Hist. of the Earth, Part ii. Conf. 2. & Part iv. Conf. 2.*

‡ *Ibid. Part iv. Conf. 2.*

† *Ibid. Part iv. Conf. 3.*

|| *Along with the Matter of Metals, Minerals, Stone, Marble, and all other terrestrial Bodies, then in a State of Solution. Nat. Hist. of the Earth, Part iv. Conf. 12.*

stone and mineral Constitution; that, for that reason, the marine Corals were dissolv'd, as well as the terrestrial Bodies, of all sorts, at the Deluge: and that the fossil Corals were finally compos'd out of the coralline, flinty, sparry, and other mineral Matter so dissolv'd. It has been also noted, that some of the fossil Corals affix'd to, and concreted upon Sea-shells, that were then sustain'd in the Water along with them. And it being a thing very remarkable that all terrestrial Bodies whatsoever, even the most firm and solid, should undergo such Dissolution, and yet the animal and vegetable Bodies, some of which are very tender, be exempted, and remain all the while intire thorough the whole Process of that great Revolution; it may not be unseasonable to offer something touching the Reason of it. Not that I shall now go about to set forth all the Particulars of this Affair. To do that, would be tedious; and indeed not needful. So that I shall reserve the rest to its proper Place; and here restrain myself to as little a Compass as may be, without being obscure.

The Earth is the great Fund out of which Bodies of all sorts arise, Animal, Vegetable, and Mineral. But Things lie in that Fund with so much Confusion, Mixture, and Uncertainty, that there are not perhaps many Things derived thence that are wholly pure, homogeneous, and unmix'd. Inasmuch that several animal and vegetable Substances have in them an Alloy of mineral Matter; as there are mineral Masses that contain some share of a vegetable Matter. Those Corpuscles that are truly of animal or of vegetable  $\pm$  Nature, differ from those which constitute the mineral Solids  $\dagger$ , in several very considerable Respects. 1. They are lighter, and of less specific Gravity, than those of Minerals are. 2. They are of different Figure; the animal and vegetable Corpuscles being extended, oblong, and frequently ramose; whereas those of Minerals are compact, and more closely collected about their Center. 3. They are of different Constitution. These are flexible||; but

$\pm$  *The Animal Corpuscles are homogeneous, and of like nature with those in Vegetables; from which they were indeed all originally derived. Vid. Nat. Hist. of the Earth, 2d Edit. p. 127. & 227. & seq.*

$\dagger$  *For this Enquiry is only relating to the Dissolution of the solid Fossils; such as Stones, Ores, and the like.*

|| *I speak here of the Corpuscles that constitute them, and not the Parts themselves. Some of them, e. gr. the Bones, are inflexible. Which does not arise from the Inflexibility of the Corpuscles that compose them; but from the Greatness of their Number, and the Firmness and Tightness of their Union and Combination. This is evident from the Bones of Animals that are young and growing; which are tender, and flexible; their constituent Particles being then fewer in number, and less closely united. The same likewise is the Case of Trees;*

but those generally ‡ rigid. 4. They differ in the Manner of their Union and Composition. The Corpuscles of Fossils are only contiguous to each other, and merely simply apply'd Surface to Surface; whereas those of animal and vegetable Bodies are complicated tied, and interwoven with one another. 5. They differ in the Cause of their Cohesion. This, in animal and vegetable Bodies, proceeds from themselves; from the Figures of the Parts of the Corpuscles, and their Twistings and Complications with one another. Whereas the Corpuscles of the fossil Solids are perfectly passive; and owe their Cohesion intirely to the Compression of the external Ambient †, wherein they exist; which Compression arises merely from its Gravity. Now from several Phænomena, at this day extant in the Earth||, it appears that the Gravity of all Bodies, solid and fluid, in and about the terraqueous Globe, at the universal Deluge, for some time, ceased, and deserted them ‡.

Things therefore standing thus, the Consequences of them are very evident, and obvious. Upon the Cessation of the Gravity of

*Trees; which, however firm they may become when grown, were all once very yielding and pliable. Besides that the Parts of either, being split, and thinn'd, are by that means render'd pliant and flexible. Not that mineral Matter, as has been already mention'd, is wholly excluded the Compages of Bones, Shells, and some sorts of Vegetables. And this may contribute something to the Increase of both their Firmness, and their Gravity. In like manner there are Fossils, as also Corals, that have a fibrous vegetable Matter incorporated with the mineral. Some indeed of the Corals, and particularly of the red, have so much, that 'twould not have been strange, had they been by it secured against the Dissolution here treated of.*

‡ So generally, that I know of only one to be excepted; which is Talc: for this seems to be composed of Corpuscles that are flexible. Vide Class 4. Preface.

† Not only the Air, and grosser, but even the finest and subtilest Parts, and indeed the whole Fluid of the Atmosphere.

|| Vide Nat. Hist. of the Earth, passim.

‡ Perhaps not intirely. For then, upon the Earth's Revolution on its Axis, all terrestrial Bodies would have been flung off, from the said Axis; and consequently the Parts of the Globe, both the Earthy, and the Aqueous, have been dissipated. So that those Parts and Bodies retain'd still just as much of their Gravity, as might serve for a Counter-Balance to the Force of that Revolution, to prevent their Dissipation; but no more. I mean in case there was then such a Revolution; which I am the more cautious of asserting, because Moses seems to imply that both the diurnal and annual Motion of the Earth was suspended for the Time; and that there was then no more a Succession of Day and Night, than there was of the Seasons, Summer and Winter. See Gen. viii. 21. 22. Conf. Jerem. xxxiii. 20. 25.

the Ambient, to which the Fossils owe the Cohesion of their Parts, their Solidity would instantly cease, and the Corpuscles fall all asunder. But that would not in the least affect the animal and vegetable Bodies; the Cohesion of whose Corpuscles arose from a Cause so very different, as is the twisting, weaving, and combination of those Corpuscles amongst themselves; which would not be in the least touch'd or disturb'd by that means. So that they must remain as firm and intire, as if no such thing had ever happen'd.

This may be illustrated by the Example of the *Magdeburg* Experiment. In which two Pieces of Marble, having their Surface exactly plane, polite, and apply'd to each other in such manner, as, so far as they are contiguous, to intercept the Air, do cohere firmly together as one; the Gravity, of the Air without, pressing and holding them together. These two Pieces of Marble, thus conjoin'd, being put into a Receiver, and the Air exhausted, immediately disunite, and fall asunder. But if there were put into the Receiver at the same time, two Pieces of Cord, that were firmly complicated and tied into a Knot; 'tis plain the drawing out the Air would contribute nothing to the loosening of that Knot, or untying the two Cords.

And this was the very Case of the animal and vegetable, and of the fossil Bodies, during the time that the Pressure of the Ambient was taken from off them at the Deluge; and lets us clearly into the Reason why these were not dissolved as well as the Fossils.

The Coralloid, and the other Nodules, form'd after that Dissolution † indeed, but during the Suspension and Relaxation of the Cause of Gravity, must have been at first soft; but as soon as the total Gravity was again restor'd to Bodies, they became solid, and settled down; and, along with the Shells and other extraneous Bodies, the Earth, Sand, and the like, compiled the Strata in which they are at this day found.

In this Catalogue there are several Instances of Nodules, and particularly of Pebles and Flints, that appear to have been so soft as to have given way to external Force and Pressure since they were form'd. So likewise for the Bodies of this Class, the fossil Corals, some of them appear to have been compress'd, others inflected, and crack'd, in such manner as could not have happen'd but before they had attain'd their present Hardness. *e. 15. 22 †. 40. 49. 50. 65.*

These Nodules, being form'd in Water, must have, in course, watery Particles disseminated thro' their Pores and Interstices. So that, during the abode of those Particles in them, the Bodies could not attain their full Solidity. But, as they successively withdrew and gave way, their Corpuscles approaching nearer to each other,

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† Vide *Nat. Hist. of the Earth, Part iv. Conf. 2.*



the Nodules became more solid, close, and firm; or at least the Parts of them: for it sometimes so happen'd, that by this Action, they were crack'd and divided into Parts. Of this the *Ludus Helmontij* affords us an egregious Proof, (*Vide* Preface to the Account of that Body, *supra*.) Nay, by the like Action the Strata of Coal, Stone, and Marble, were frequently crack'd in like manner. But tho', in tract of time, part of the Water, wherewith they were saturated, thus quits them, yet the whole never drains forth, nor do they arrive at their utmost Solidity till they are brought up; out of the Bowels of the Earth, into the Air. This is evident in Stone, and in Marble, which are softer, and may be cut and work'd with much greater ease, when first parted from their Strata, than afterwards when they are rais'd to the Surface, and have lain there till wholly freed from the Humidity wherewith they were charg'd whilst below.

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## CLASSIS V.

### *Corpora Coralloidea, & hisce affinia.*

#### PARS I.

##### *Coralloidea ramosa.*

SECT. 1. Coralloidea ramosa, superficie lævi.

2. Corall. ram. superficie reticulatâ.

3. Corall. ram. superficie stellatâ.

4. Corall. ram. à superficie ad Medullam striata, seu lineata.

#### PARS II.

##### *Coralloidea Cylindriformia.*

SECT. 1. Coralloidea Cylindracea, è lamellis composita secundum longitudinem à Superficie ad Axin tendentibus.

2. Coralloidea tubulosa crebris lamellis transversis intercepta.

#### PARS III.

##### *Coralloidea Columnaria pentaedra.*

SECT. 1. Coralloidea oblonga pentaedra, laminis à Superficie ad Axin tendentibus.

2. Coralloidea oblonga pentaedra septis transversis distincta.

## P A R S IV.

*Mycetita Coralloides.*

- SECT. 1. Mycetitæ Conoides, seu Calyciformes.  
 2. Mycet. forma compressa, seu Discoides.

## P A R S V.

*Astroita Coralloides.*

- SECT. 1. Astroitæ Stellis prominulis.  
 2. Astr. Stellis in plano delineatis.  
 3. Astr. Stellis depressis.  
 4. Astr. Foraminosi, sive à Superficie ad interiora Corporum excavati.
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## C L A S S I S V.

*Corpora Coralloidea, & hisce affinia.*

## P A R S I.

*Coralloidea ramosa.*

## S E C T I O I.

*Corpora Coralloidea ramosa Superficie levi.*

e. i. Five small Branches of Coral, of a grey Colour; and one white. Found in a Quarry not far from *Ensum-Ferry, Oxfordshire*. One of them has the Shell of a *Vermiculus Marinus* adhering to it: 'Tis very common to see Flint and other mineral Matter affix'd and adhering to fossil Shells. This apply'd itself to them during the time that the said Shells, and the dissolv'd mineral Matter, were sustain'd together in the Water at the Deluge. *Vide Nat. Hist. of the Earth, Part iv.* The Case of this Coralloid Matter was the same. Nor can I see any reason why real Coral, not different from that now observ'd at Sea, may not be found: and adhering also in like manner to Shells. There are below some Bodies that I take to be Instances and Proofs of it, and really of the same sort. *Vide e. 12. 33. 34. 49. 55.* The true marine Coral is indeed a stoney Substance; and of mineral Nature and Origin. The constituent Matter of it is beat off from the Rocks and Cliffs, where the Agitation of the Sea is great; born thence, precipitated, and affix'd to Rocks, Stones, Shells, or other Things, where the Water is more still and calm. As 'tis of the same Constitution, so it owes its Solidity, and the Cohesion of its Parts, to

the same Cause that Stones and other Minerals do: and consequently must have undergone the same common Fate, and been dissolved, as well as they, at the Deluge. And *that* Coralline Matter, so dissolved, might as well concrete again, as that Matter which constituted the mineral Nodules, particularly those of this Classis, and Flints, Pyritæ, &c. Nor can there reasonably be any doubt, but there was, in some parts of the Fluid, a Collection of homogeneous Coralline Matter: as from the Nodules we learn there was of Talky, Crystalline, and other Mineral Matter. Now, out of that, Coral might as well be form'd, as Talky, Crystalline, and other Mineral Nodules out of those dissolved Minerals.

e. 2. A Piece of a Coralloid Body, black, both on the Outside, and in the Body, where broken. 'Tis not much above half an Inch long, thicker than any of the precedent, a little bent, and appears to be part of a Branch broken off from the rest. Out of a Quarry near *Windrush, Gloucestershire*.

e. 3. A great Number of Coralline Bodies, lodg'd pretty close in a grey Stone. They are generally near as thick as a Wheat-Straw: and some of them are branch'd, but whether all, is not so easy to discern. In a few there are Branches from one to another, which, meeting, join them together. Found on the Shore near *Sunderland, in the Bishoprick of Durham*.

e. 4. A *Fasciculus* of several Pieces of a grey Coral, lying generally parallel, and held together by means of several small Branches passing from one to another, and uniting where they meet. The whole somewhat resembles the *Tubularia purpurea* of *Ferrante Imperati*: and the Stems of this are of the thickness that those of that commonly are. Some of them are tubular, others solid. Found near *Sedberg, in Yorkshire*.

## PARTIS I. SECTIO II.

### *Corpora Coralloidea ramosa superficie reticulata.*

e. 5. A pretty thick Piece of grey Coral, having the Vestigia of three Branches rising out of it. It is finely cover'd with a sort of Net-work all over its Surface, the Meshes small, and round. Found in a Stratum of Rubble-Stone, lying over the blue Lime-Stone, in the great Pits near *Dudley, Staffordshire*.

e. 6. Another smaller, otherwise little different, from the same Place. Being broken, it appears to consist of a grey Spar. This is only a Piece broken off a Branch: as also e. 8. *infra*.

e. 7. Another from the same Place. The Meshes of the *Reticulum* in this are smaller than in either of the former. The Trunk of it runs into two Branches.

e. 8. Another, the Meshes still less. This differs from the rest, in that it is striated from the Surface throughout to the Middle of the Body. From the same Place. This is indeed nearly related to that e. 13. *infra*, and might as well be placed in that Section. *Vide e. 6. supra*.

e. 9. Another, with one Branch arising out of it. This is partly reticulated, and partly striated on its Surface. From the same Pits.

e. 10. A small white Piece, bifurcated, or branching into two, and finely reticulated all over. It lay in a whitish Stone, thick set with the Pellicules of Ova of Fishes, and Fragments of Shells; having upon it likewise a fair Impression of a small Pecten. Found in a Stone-Pit on the South-East Side of *Wakerby, Northamptonshire*. Mr. Morton.

#### PARTIS I. SECTIO III.

##### *Corpora Coralloidea ramosa superficie stellata.*

e. 11. A pretty large Piece of a Coralline Body, of a brown Colour, dividing itself into three Branches, a few small whitish Stars appearing on some parts of the Surface of it. It lies in a grey Stone, in which are many Fragments of Sea-Shells of several sorts. Found in a Stone-Pit near *Broadwell-Grove*, (on the Edge of *Oxfordshire*) in *Gloucestershire*.

e. 12. A Piece of a ramose Coralline Porus, having its Surface thick set with Stellar Pores, very fair, and distinct, in a Quincunx Order. Found in a Chalk-Pit, upon the Downs, near *Croydon, Surrey*.

#### PARTIS I. SECTIO IV.

##### *Corpora Coralloidea, ramosa, à superficie ad medullam striata, seu lineata.*

e. 13. A small Piece of a Coralline Body, with part of a Branch rising out of it. The Surface is black, and reticulated all over much like e. 8. It is not perfectly round, but of a flattish Shape. Both the Body and Branch are striated from the Surface to the Middle: and there are several Circles in the Substance of it intersecting the Striæ. So that, somewhat resembling, in Shape and Texture, the Branch of a Tree. This sort is not unfitly called *Stelechites*, by the Writers of Minerals. From *Tortenho* in *Cumberland*: from whence I had several, little different, only that few of them had any Vestigia of Branches, being perhaps only Pieces. Mr. Morton.

e. 14. Another, of a dark yellow Colour, with three Branches rising out of it. This is not only striated from the Surface to the Middle, but has Striæ running lengthways both on the Body and Branches of it. The Striæ are so fine, that they are but just perceivable: and are in some places wanting, it seeming to have been fretted and worn. 'Twas found amongst the Gravel in the quadrangular Court of *Sir Ralph Dutton's House* at *Sherborn, Gloucestershire*.



## PARTIS II. SECTIO I.

*Coralloidea Cylindriformia à Lamellis composita secundum Longitudinem, à superficie versus axem dispositis.*

e. 15. A single Coralline Cylinder,  $1\frac{1}{4}$  Inch in Length, and  $\frac{1}{4}$  of an Inch in Diameter; striated not only from the Surface to the Axis, but upon its Surface likewise with Striæ parallel to its Length. There are also 12 or 13 annular Ridges round it. 'Tis of a grey Colour. Found with N<sup>o</sup> 5. *supra*, in the Lime-Stone-Pits near *Dudley*. At one End 'tis crack'd, and compress'd as if by some external Force, before it had attain'd its present Hardness.

e. 16. Part of a Cylindrical Body, an Inch in Diameter, and near as much in Length. The Plates passing from the Sides to the Axis are of a grey Spar, sprinkled very thick with small Sparks of a very bright Crystalline Spar. They are externally tinctur'd, in some parts, with a ferruginous Colour, and in others with a light brown. Found in sinking a Copper-Mine upon *Ormshead*, alias *Lhandidno*, in *Caernarvanshire*. There are found along with these Bodies grey Flints, whereof some parts are solid, and capable of a Polish; others are scabrous and porous. To these Flints the Bodies of the sort now described do frequently adhere.

e. 17. Many like Bodies, but thicker somewhat, and longer; some of them double the Length of the preceding, lying pretty close, and parallel to one another, in a brown Sand-Stone. They are most of them broken: and appear to consist chiefly of a grey Spar. From the Rocks at *Helsfield*, near *Kendal*, *Cumberland*. Mr. *Fitz-Roberts* informs me, that they are found plentifully on the upper Surface of the uppermost Stratum but one, standing all of them erect, with their Tops tending into the horizontal Fissure that parts the two Strata. He never saw any of them lodg'd, or wholly immers'd in the Mass of Stone. Two of them have Branches, of the same Constitution, rising out of them. *Conf. e. 18. infra.*

e. 18. A Piece of the same Stone, with several like Bodies in it. The Striæ, tending from the Surface to the Axis, in these, are intercepted by several small white Circles within one another. From the same Place. See an Hint about the Origin and Formation of these, in the Account of the Spar, *English Additional Native Fossils*, b. 170. I am not without Suspicion, that the Honey-Comb-Stone is form'd in like manner; at least I have seen it in the horizontal Strata of Stone in some Quarries near *Oxford*. *Conf. e. 22. e. 84. 85. infra, & e. 17. supra.*

e. 19. A Mass of a pale brown Stone, in which are lodged, in various Situations, several Cylinders about  $\frac{1}{2}$  of an Inch in Diameter. They are made up of Plates, placed lengthways of the Cylinders, so as to compose such a sort of Stellar Pore, as is describ'd N<sup>o</sup> 12. *supra*, running through the whole Length of the Body.

Body. These Plates are set in a small Tube. The whole consists chiefly of a semipellucid Spar. Found loose in a Stone-Pit, on the Top of *Hackness-Head*, a high Hill near *Scarborough, Yorkshire*.

*e. 20.* Several like Bodies, but somewhat less, placed parallel to one another, and very thick, in a brown Flinty Substance. These consist chiefly of a whitish Spar; and are made up of white Plates, set as those of the former are, but have no Pores, the Intervals of the Plates being wholly fill'd up with a somewhat more pellucid Spar. *Kendal, Cumberland.*

*e. 20\*.* Like Bodies placed also in the same manner, in a very hard grey Stone. From - - - - in *Brecknockshire*.

*e. 21.* Several Cylinders, little different from the former, only that they are scarce so white, and set in a brown Stone. Many of the Cylinders in this, and the following Bodies to *e. 30.* inclusive, have not the Plates so distinct, and easily perceivable, as those of all the foregoing. Indeed several of them seem to be wholly solid. Shores of *Minehead, Somersetshire*.

*e. 22.* Several Cylinders like those of the precedent, set very thick in a dark Stoney Mass. Found between *Skegness and Ingoldmells*, on the Shores of *Lincolnshire*.

*e. 22\*.* Like Cylinders, about  $\frac{1}{8}$  of an Inch in Diameter, consisting of a white shining Spar-like Substance; but they are externally of a very dark grey, which is the Colour of the Stone in which they lie, very close, and parallel to each other. The Stone off which this was broke, tho' itself only a Fragment, was near two Foot long: and the Cylinders extended through it for that whole Length. Sent me by the very learned Dr. *Cay*, by the Name of *funi Lapidei*, or *Marmor junceum*. The Mass takes a very good Polish. 'Twas taken out of a Quarry betwixt *Carlisle and Cockermouth*. The common Stone of the Quarry is much different; and this is found only in Spots: but, as he was informed, placed there in such a manner, that the Cylinders stood erect. *Conf. e. 17. & 18. supra.*

*e. 22†.* Another Piece of the same Stone. In this the Cylinders are many of them bent: not naturally, but by some external Force; they being apparently crack'd. There is in it a small Vein filled with Spar, probably since the Time of the Compilation of the Mass.

*e. 23.* A Stone of a brown Colour, thick set with parallel Cylinders, little different from those of *e. 21. & 22.* In all these three, the Stoney Matter being stripp'd off by some external Force, the Cylinders appear on one Side of the Pebble naked and fair in view. Found on the Shores near *Sunderland* along with *e. 3.*

*e. 24.* A grey Stone, in which the parallel Cylinders are of the same bigneis, and placed as thick as those of the former; but are whiter, and more like Marine Coral, and some of them very plainly at the Ends radiated as a Star; that Form arising from the Position of the *Lamina* described already. Found on the same

Shores with the former. On one part of the Body are several Cylinders, in a Position transverse to the others: and one of them as thick again as any of the rest.

e. 25. A grey Stone, very thick set with like Cylinders. This, and several of the following, are worn smooth by the Sea; so that the Cylinders appear, on all sides, variegating the Stone in a very beautiful manner. From the Shores near *Outhorne, Yorkshire*.

e. 26. Another less, and of a brown Colour. Found between *Skegness* and *Ingoldmells*, on the Shores of *Lincolnshire*.

e. 27. Another black, the Cylinders smaller. From the same Shores.

e. 28. Another black, less, but the Cylinders somewhat larger. Found on the Shores near *Scarborough, Yorkshire*.

e. 29. Another, of a dark grey Colour: and the Cylinders, being white, variegate the Stone very prettily; making together a very elegant Body. This was found on the Shores of the River *Humber*, in *Yorkshire*, near *Paul*.

e. 30. A brown Stone, very thick set with greyish Cylinders, whose Ends appear on all Sides of it. Found on the Shore of the River near *Thripland*, in *Westmorland*. There were more of the same.

e. 31. A brown Stone, set with whitish Cylinders. These are in some measure porous, the Intervals of the Plates being not quite fill'd, Sea-Shores, *Sunderland*.

e. 32. A grey Stone, in which are several white sparry Cylinders, something larger than those of the former, and set in a Quincunx Order. Found on the Shores of *Lincolnshire* with N<sup>o</sup> 22. *supra*.

e. 33. A Mass, not quite so hard as a Pebble, of a very dark grey Colour. In it are several large Cylinders, being generally above  $\frac{3}{4}$  of an Inch in Diameter. The longitudinal Plates passing from the Surface to the Axis of the Body, are white, and their Interstices fill'd with a pellucid Matter. The Coralline Bodies being white, and the Stone near black, appear together very beautiful. Found on the Shores of the River *Tyne*, near the Sea, at *North-shields*. This Stone, where broken, on one part exhibits an Impression of a Bivalve: and there are immers'd in it three or four Pieces of the *Spina* of an *Echinus Ovarius*. *Confer.* e. 34.

e. 34. A small Stone, of a dark grey Colour. 'Tis flat, being worn and ground by the Motion of the Sea. In this are Pieces of Cylinders of several Diameters, from  $\frac{1}{2}$  to  $\frac{1}{2}$  an Inch over: composed of Plates passing towards the Axis of the Bodies. They are intersected by other Plates, so as when broken, the Bodies appear reticulated. The cylindraceous Bodies in this, and e. 33, are white: and, both in Substance and Texture, resemble a sort of Porus, which we have from the Sea. This was found on the Shores near *Skegness, Lincolnshire*,

e. 34\*. Coralloid Cylinders, set parallel to each other, in a grey Stone. This is worn in such manner, as very fairly to shew the interior Constitution of the Cylinders, which have *Lamellæ*, from their Surface to their Axis, for their whole Length, like the rest of the Bodies of this Section: which likewise are intercepted by transverse *Lamellæ*, like those in the following Section; which probably would appear to be the Case of several of the other Bodies in this Section, if their interior Constitution were as fairly expos'd to view. *Potgill, near Hartly, in Westmorland.*

e. 34†. Coralloid Cylinders, of much the same Constitution with the foregoing, but larger, being  $\frac{1}{4}$  of an Inch in Diameter. They are environ'd outwardly with annular Circles, set very thick and close together. From - - - - - *Cumberland.*

## PARTIS II. SECTIO II.

*Coralloidea tubulosa crebris lamellis transversis intercepta.*

*Vide Ind. supra, p. xxvii. e.*

e. 35. A Stone of an Iron-Colour, wherein are lodged many Tubes, appearing to be of a Spar, white, with a reddish Cast. They are generally about  $\frac{1}{2}$  of an Inch in Diameter, pretty near streight, and parallel to each other. The Stone is thick set with them. Throughout the whole Length of the Tubes, are Plates of the thickness of  $\frac{1}{32}$  part of an Inch crossing the Tube, the Interval between each Plate being of about the same Dimensions. Shores near *Outhorne, Yorkshire.*

e. 36. Another, brown; set pretty thick with Tubes of the same Size and Matter with those of the foregoing, only without any Mixture of Red. The Tubes are striated length-ways; and their Cavities set with Valvules, or Septa, like those of the former. Shores near *Skegness, Lincolnshire.*

e. 37. Another; neither the Stone nor Cylandrick Tubes here differ from the former, only one of them has a Branch rising out of it. From the same Shores. *Mr. Morton.*

e. 38. Another, but softer, grey Stone, thick set with like Cylinders, but irregularly placed; those of the precedent from N<sup>o</sup> 17. lying generally parallel to one another. One of these Cylinders is crooked, as if bent almost double. From the same Shores.

e. 39. A brown Nodule, very hard, and thick set with Tubes, variously placed. The Hollows of the Tubes have Valvules in them, which are cross'd by thin Plates passing the whole length of the Tubes. The Intervals being empty, the Tubes appear cancellated where broken. They much resemble a sort of Coralline Pori. From the same Shores.

e. 40. A Stone of a light brown Colour, very thick set with small Tubes, in various Positions, some few of them a little crooked. The Diaphragms or Valvules are whitish: and have their Inter-

vals fill'd up with a brownish Sparry Matter. The Ends of several of the Tubes appear stellated, they seeming to have *Laminae* passing from the Surface to the Axis through the whole length of them, of which indeed there are some Vestigia in most of this Class. Found alone on the Road between *Bradford* and *Leeds*, *Yorkshire*.

## P A R S III.

*Coralloidea columnaria pentaedra.*

## S E C T I O I.

*Coralloidea oblonga pentaedra laminis à superficie ad axem tendentibus.*

e. 41. A grey semi-pellucid Flint, the Ground much like the *Indian Agat*, but thick set with white Pentagonal Columns, about  $\frac{3}{4}$  of an Inch in Diameter. They are made up of several longitudinal thin Plates, all set edgeways towards the Axis. The Columns stand parallel to one another: and are placed at equal distances, being about  $\frac{1}{30}$  of an Inch from each other. The Body being cut transversely, its whole Surface appears like a Net made up of pentagonal Meshes, with a pentagonal Star in each Mesh. The Sides of the Columns are not exactly equal, and consequently not those of either the Meshes or Star. From----- in *Wiltshire*.

e. 42. An oval Plate cut transversely off the precedent Flint, and polished. It takes as good a Politure as any Agat: and is a wonderfully beautiful Stone.

e. 43. A piece of another, of the same sort, from the same Place. In this the Ends of the Columns terminate in the several stellar Cavities at the under Surface of the Flint, much like those in the larger *Astroites*, or starr'd Honey-comb-stone.

e. 43. A piece of another. In this the Stars, on one side, are hollow, so as exactly to resemble a common Species of marine coralline *Astroite*: on the other side, the Hollows are fill'd with a flinty Matter. This Body shews plainly that these starr'd Coralloids were form'd after the manner of the starr'd Sea-Corals: and differ only in the additional flinty Matter. From the same Place.

## P A R T I S III. S E C T I O II.

*Coralloidea oblonga pentaedra, Septis transversis distincta.*

e. 44. A Coralloid Body, of a grey Colour, made up entirely of several small quinquangular Columns, cross'd very thick with transverse Septa. At the end of each appears a small pentagonal Cavity, by which means that part of the Surface of the Body is reticulated all over. The Columns are not placed parallel; but so that they point and verge towards a Center. This was found in the great Lime-stone Pit, near *Dudley*, *Staffordshire*.



e.45. Another, the Reticulum upon this is very uniform, and elegant. The Stone is broken on one part: and appears within to be compos'd of a grey Spar. From the same Place.

e.46. Another, with a like Reticulum spread over the whole Surface of it. From the same Pit.

#### P A R S IV.

##### *Mycetita Coralloides.*

#### S E C T I O I.

##### *Mycetita Conoides, seu Calyciformes.*

e.47.48. Two small Mushroom-stones, in form of a bluntish Cone, near half an Inch in length, and  $\frac{3}{10}$  cross the broader End. They are of a grey Colour, and made up of Lamellæ running from the outer Surface to the Axis of the Cone. They terminate so as to make a round stellar Cavity at the broader End. The Lamellæ are held together by a whiter Matter interpos'd betwixt them. I collected several of them on the Shores of the Island of *Sheppey*, some of which are since dissolv'd, and appear to be compos'd chiefly of Vitriol, which shoots plentifully out of them, in form of a white Salt, after they have been some time expos'd to the Air.

e.49. Fifteen other Mushroom-stones of near the same Shape with the precedent. Some of them are something bigger, and others less than those are. These are of a white Colour, and in Shape exactly resembling a sort of Coralline Fungus of Marine Original, which I have by me. Some of them, at the small end of the Cone, expand themselves into a flat Plate as if they had adhered to some other Body: and two of them have fragments of Crusts of *Echini* affix'd to that part of them; to which Crusts, sustain'd in the Water of the Deluge, the Particles, constituting these Mushroom-stones, affix'd and concreted. Two or three of them appear somewhat bow'd or incurvated. From the Chalk-Pits of *Purfleet*, *North-fleet*, *Greenhythe*, and *Croydon*.

e.50. Three other like Bodies, of a dark grey Colour,  $\frac{3}{4}$  of an Inch long and a little incurvated. These end in a somewhat sharper Point than the former; and are encompass'd by several annular Ridges. One of them, being broken, appears within to be made up of a grey Spar. From the Rocks near *Kendal*, *Westmorland*. There are also Mushroom-stones of this kind found at *Torpenhoe*, in *Cumberland*.

e.51.&52. Two others, of a red Colour, near as big again as the precedent, but of a comprest Shape. Otherwise they differ little from the former. From *How-Lees*, betwixt *Newbiggin* and *Stainton*, *Cumberland*. Mr. *Nicholson*, afterwards Lord Bishop of *Carlisle*.

e.53. Another from the same Place, not comprest, and much shorter than either of the foregoing.

e. 54. Another Mushroom-stone, of a light brown Colour,  $\frac{3}{4}$  of an Inch in length. This consists of a round Stalk  $\frac{1}{2}$  an Inch thick, swelling at one end into a Head  $\frac{3}{4}$  of an Inch over; upon which is a shallow stellated Cavity. 'Tis made up of Laminæ plac'd as in e. 47. and 48. This was found in a Gravel-Pit, in a Valley near *Wheat-Lands* Mill, beyond *Northleach*, *Gloucestershire*.

e. 55. Another, in shape not much unlike the former, only somewhat bow'd; but much larger, being  $2 \frac{1}{2}$  Inches long, and the Head near two Inches over. The Plates, of which it consists, are white: and appear of a Substance very like Coral, where freed and clean'd from the grey earthy Matter which is insinuated into it. Out of a Lime-stone Quarry, near *Dudly*, in *Staffordshire*.

e. 56. Another, somewhat bow'd and compress'd;  $1 \frac{1}{2}$  Inch in length, and above  $\frac{3}{4}$  of an Inch over at the Top. There are four Angular Ridges environing it, at about  $\frac{1}{4}$  of an Inch distance from each other. It consists of a grey Spar: and was found on the plough'd Lands in the Fields on the West side of *Oxford*.

e. 57. Another little different, only less, being but an Inch long. Found with the former.

e. 58. Another of much the same Shape and Size with the precedent. This is made up of a grey Spar, but outwardly colour'd with a blue Clay, in which it lay. In a Pit at the Foot of *Shot-over-Hill* near *Oxford*.

e. 59. Another found in the same Clay tinged with it, and compos'd of a like Spar with the former. This is of a conick Shape, an Inch and half in length, and near as much in Diameter, at the broader end, where 'tis hollow'd, in manner of a Cup, for above half the length of the Stone.

e. 60. A *Mycetites*, of a grey Colour, the lesser end appearing abrupt and about  $\frac{1}{2}$  an Inch over, the other near an Inch. 'Tis of a Form somewhat compress'd, being scarce half an Inch high. The Laminæ appear at both ends tending towards the Axis of it. From the great Lime-stone Quarry, near *Dudley*, *Staffordshire*.

e. 61. Another like Body, but less, and of a white Colour, having a considerable cup-like Cavity in it. There arises out of one side of it, a Body of much the same Size and Shape with that e. 57. Found on the plough'd Lands with e. 56. and 57.

e. 62. A Mushroom-stone consisting of several Laminæ plac'd as in the former: and surrounded with several pretty high annular Ridges. 'Tis inclining to a conick Form, though abrupt, and not coming to a Point. The Length of it is  $2 \frac{1}{2}$  Inches, the Diameter  $1 \frac{1}{2}$  where broadest. 'Tis of a Ferruginous Colour: and by that, and its weight, seems to hold Iron. Found loose upon the Sides of *St. Vincent's* Rocks near *Brislow*, amongst many other like Bodies, beat out of the Stone by Rain and Weather.

e. 63. Another about the same length, but not so thick, nor so taper'd as the former: nor are the Ridges about it so high. It seems

seems to be of the same Nature and Composition with that: and was found in the same Place.

e. 64. Another, little different from the preceding, but thinner, and rough, as if eroded, on the outside. 'Tis broke in one part, where there appears a whitish Spar incorporated with it. Found also on St. Vincent's Rocks.

e. 65. A Body of the same Colour and Substance with those e. 49. *supra*, with a stellar Cavity, and Laminæ passing towards its Axis, thorough the whole length of it, as in those; tho' 'tis of a different Shape, being not at all tapering, but of near the same thickness, *viz.*  $\frac{3}{8}$  of an Inch in all parts, crooked, and distorted. 'Tis an Inch and half in length. From the great Chalk-Pit at Northfleet, Kent.

e. 66. Another, of a grey Colour, near two Inches in Length, and one and  $\frac{3}{4}$  in Diameter. The Shape and Texture nearly agreeing with the precedent: only the Intervals of the Laminæ passing lengthwise of it, and appearing at the two opposite Ends, are most of them fill'd with an adventitious brown earthy Matter; whereas in that they are generally empty. Found on the Seashores near Scarborough, Yorkshire. This, and the preceding Bodies, being not only made up of Longitudinal Plates passing towards an Axis, but likewise of a Shape nearly cylindrical, may be more fitly referr'd to those, Part 2. Sect. 1.

e. 67. Another, of much the same thickness in the middle as e. 65. *supra*, but somewhat tapering towards each end. 'Tis  $1\frac{1}{2}$  Inch in length, of the same Colour, Substance and Texture, and found in the same Chalk-Pit with e. 65. There are Parts of the Bases of several Balani affix'd upon it.

#### PARTIS IV. SECTIO II.

##### *Mycetia forma compressa, seu Discoides.*

e. 68. Twelve Stones, opake externally, and of a yellowish brown Colour, but consisting within of a white semi-pellucid Spar, as appears by one of these, and many others, which I have broken. They are all of a compressed Shape: but some more, and some less. They are generally round, and all these are so except two, which incline towards an Oval. One side of them, which may be termed the Base, is generally flat, but in some of them somewhat concave: the other somewhat rising and convex. In the middle of this side is a little Hollow or Umbilicus; from whence arise many very fine Sulci or Striæ, and small Ridges, alternately, passing on, of all sides, and terminating in the middle of the Basis. Upon the Surfaces of some of those Stones appear many extremely small glittering sparry Sparks. The least is not quite  $\frac{3}{4}$  of an Inch in Diameter, the largest above  $\frac{1}{4}$  of an Inch. The thickest is half an Inch in perpendicular height, the least not  $\frac{1}{16}$ . These Stones are called by Doctor Plot, *Porpites*, as much resembling a Hair Button. These here were found generally on the plough'd Lands in the

the West of *Oxfordshire*, and those Parts of *Norhamptonshire*, *Gloucestershire*, and *Berkshire*, which adjoin to it.

e. 69. Two like Bodies of a middle Size, the Surfaces of these are smoother, having the Striæ so extremely fine as to be but just discernible by the naked Eye. Found on plough'd Lands on a Hill near *Ensum-Ferry, Oxfordshire*.

e. 70. Another, of a flat compressed Shape, almost an Inch in Diameter. The Basis of this is flat; but hollowed by the Edges rising into a Brim quite round. It is striated and ridg'd on both sides, but the Ridges in this and all the following to e. 79. are grosser than those of the precedent. *Broadwell-Grove, Gloucestershire*.

e. 71. This is little different from the preceding. *Aulsworth, Gloucestershire*.

e. 72. & 73. Two others, thicker than the foregoing and broader, being above an Inch in Diameter. The Bases of these are a little concave: and not striated to the Center as the former; but have several annular Striæ, within one another, surrounding the Center. There appear some small glistering Sparks upon them: and having broke several of them, I find them to consist chiefly of a semi-pellucid Spar. *Rislington Parva, Oxfordshire*.

e. 74. A Stone of the same Texture and Breadth with the two last; but flatter, and of a dark grey Colour, all the foregoing being of a light brown. The Ridges in this, and the following, are thick set with very little Knobs. From the Shores near *Whitton, Lincolnshire*.

e. 75. Another of the same Texture, Colour, and Constitution; only in this the striated side is a little Concave, and the opposite proportionably Convex. This also and the four following, from *Whitton Shores*.

e. 76. Another, not different, only less, being but about half an Inch in Diameter, and having its Basis flat. *Whitton Shores*.

e. 77. Another of the same Size and Constitution, only the Basis is concave. This also is of a grey Colour. *Ibid*.

e. 78. Another,  $\frac{3}{4}$  of an Inch in Diameter, and somewhat more convex than the foregoing. The Basis of this is flat and striated, the Ridges between the Striæ being punctulated, as are all the foregoing from e. 74. inclusive. The upper or convex part is smooth, except three annular Striæ described, round the Umbilicus of one within another. This is of a brown Colour. *Ibid*.

e. 79. Another, grey, and somewhat less; otherwise not different, only that the striated Basis is a little Concave. *Ibid*.

e. 80. A white Stone of the same Diameter with the last, but more concave in the Base, and more prominent and tending towards a Cone on the Convex part. The Base is smooth, excepting the Annuli encompassing its Center. The upper part is thick set all over with very small Cavities. From the great Chalk-Pit at *Greenwich*.

e. 81. Another from the same Place, less, but otherwise little different.

e. 82. A Stone of a grey Colour. The Base is pretty flat and distinguished by large circular Ridges and Furrows alternately. There are some Vestigia of other Ridges tending towards the middle and crossing these circular ones; so that this Body on the side appears as if cancellated. The upper part is Convex: and has its Surface pierc'd all over with small round Holes at near equal distances. This is about  $1\frac{1}{4}$  Inch in Diameter. From the great Lime-stone Quarry, near *Dudley* in *Staffordshire*.

e. 83. A flattish Stone much larger than any of the former, being about  $2\frac{1}{2}$  Inches in Diameter. Each Surface of this is somewhat convex, gradually lessening from the middle towards the Edges all round. The Edges are not plain, but curl'd or undulated. On one side there are circular Ridges, and Furrows, alternately, parallel to each other about the Center, in much the same manner as some of those described above. These are cross'd by fine small Striæ, passing from the Edges towards the Center. On the other side, where-ever 'tis freed from the Sand-stone, in which it was originally enclosed, 'tis covered with linear Striæ, tending towards several Centers, so as to compose flat stellar Figures. Found in a Quarry on the North-side of *Sherborn*, *Gloucestershire*.

## P A R S V.

*Astroita.*

## S E C T I O I.

*Astroita Stellis Prominulis.*

e. 84. A Piece of a grey Stone, very hard, with Spar intermingled in small proportion throughout the whole Substance of it; but, on one part of it, which is flat, the Spar is in greater Quantity, and in some Places shot into small Crystals. From this flat sparry Substance arise sexangular pyramidal Bodies. They are all nearly of the same Size, being about  $\frac{1}{4}$  of an Inch in perpendicular, and somewhat more in Diameter at the Base. They are ranked, pretty regularly, in a Method, approaching to that of a Quincunx. They stand so close that their Bases are contiguous to each other, and are striated, from the Apex to the Bais; besides that the Striæ of one run into and communicate with those of the other stellar Pyramids all round. In one part of the Stone is a Piece of a Shell of the Pecten kind. Found in a Quarry on *Cowley* Common near *Oxford*.

These starry Efflorescencies were form'd on the upper Surface of a Stratum of Stone at a Partition, or horizontal Fissure. The part of the Stone, of that Stratum, on which it had so concreted, is still joining the starry Efflorescencies. The Stratum being horizontal, the Efflorescencies are erect. There were two other thin Strata over that on which these were fix'd. *Vid. e. 18. supra.*



e. 85. A Piece of a whitish Stone, very soft, and having one Surface set all over with stellar Prominences, but much less than the former. Found in a Stone-Pit, on *Shot-over-Hill*, near *Oxford*, growing on the upper Surface of a Stratum, at the Partition, after the manner of the precedent.

PARTIS V. SECTIO II.

*Astroita Stellis in Plano delineatis.*

e. 86. A roundish Body of the bigness of a large Walnut, of a yellowish brown Colour, like that of the *Mycetita*, e. 68. and having also, like them, upon its Surface, many extremely small, glittering, sparry Sparks. The Surface is cover'd all over with stellar Figures, delineated *in plano*, about  $\frac{1}{2}$  of an Inch in Diameter. The Striæ of each of these Stars communicate with, and run into the Stars all round it. Having the Stars apparent on every side, and there being not the least Mark of Adhesion to any other fix'd Body, 'tis plain this was form'd suspended in the midst of a free Fluid, as the other Nodules were, at the Deluge, and is itself a Nodule.— Found upon the plough'd Lands in *Yanworth-Fields*, in *Gloucestershire*. This is a Nodule, as indeed all of this, and the following Section, are; unless it be 90, which is so broken, I cannot well judge of it. I broke several of these: and found them, within, consisting intirely of a fine, white, transparent, crystalline Spar.

e. 87. A Stone much larger than the former. 'Tis compos'd chiefly of a coarse grey Spar; and has all over its Surface Stars much like those of the former. There are small undulated Rifings on several parts of its Surface, so as to make it a little resemble the Brainstone, or *Astroites maritimus Coralloides undulatus*. Found in a Gravel-pit, in the Road in the Vale beyond the River, near *Wheatlands-Mill*, *Gloucestershire*.

e. 88. A large flat Stone, of the same Colour and Constitution with e. 86. and having on the two opposite Planes, Stars like those of that, but bigger, especially on one side. Some few of the Stars are hollow'd; and pass in manner of a stellar Pore into the Substance of the Stone. The Striæ of the exterior part of these Stars, which stand next the edge of the Stone, pass down by the sides of the Stone for the whole thickness of it, which is about an Inch, and terminate in the Striæ of the Stars on the edges of the opposite Plane. From which 'tis natural to conclude, that, as in several that I have broken, to observe their Fabrick and Texture, both fossil, and marine, the Stars in this likewise pass the Substance of the Stone quite cross from Plane to Plane. Found on plough'd Lands near *Sherborn*, *Gloucestershire*.

e. 89. Another large flat Body, of much the same Texture and Constitution, but of a grey Colour, excepting a large Vein of a reddish sandy Hue. The Stars in this are larger than in any of the former, being generally about half an Inch in Diameter. Found at the Head of the Spring near *Hilden*, in the East-Riding of *Yorkshire*.

e. 90. A Piece of Spar, white, except on one side, where it is flat, and of a brown Colour. This Flat is pretty thick set with Stars of the same size with those of e. 86. only the Radij of the Stars here sink somewhat deeper into the Stone; nor do the Radij of one Star pass on and communicate with the adjoining Stars, as in that. From a Lead-Mine at - - - - - Cumberland Mr. Nicholson.

# PARTIS V. SECTIO III.

## *Astroita Stellis depresso.*

e. 91. A sparry Nodule of much the same Constitution with e. 87. and found in the same Gravel-Pit. The Surface is very uneven, rising into large Knobs on all sides. The Extremities of the Knobs are smooth, as if worn; but the Intervals, and other parts less expos'd to Attrition and external Injuries, are beautifully adorn'd all over with little excavated Stars, each about  $\frac{1}{10}$  of an Inch in Diameter.

e. 92. A globular sparry Body, of a brown Colour, near four Inches in Diameter, with several large Knobs about the Surface. The whole is cover'd over with Stars, sunk something deeper into it than those of the former. Found on the plough'd Lands near Northleach, in Gloucestershire.

e. 93. A Piece of white, semi-pellucid, crystalline Spar. Part of the exterior Surface is of a brown Colour, set with like Stars, but somewhat larger, very fair, hollow'd pretty deep, and rising gradually from the Center to the Ambitus of the Star, there terminating in a pretty sharp Ridge all round. These Ridges communicating with each other, resemble a sort of Net-work, with a Star in each Mesh. 'Tis indeed a very beautiful Object. From a Quarry on the North-side of Irthingborrow, Northamptonshire. Mr. Morton. See his *Nat. Hist. of Northamptonshire*, p. 183. He informs me that there are found there, of these, of different Sizes, from the bigness of a Hen's Egg to that of a Man's Head. Their Shape also is different; but, being, as he says, all Nodules, generally tending towards a globular Figure. The Outfides of them are constantly stellated all over. I cannot but take the Occasion to note, that, tho' these Bodies agree well with the marine *Astroita*, as to the exterior Appearance, and Form of the Stars; and doubtless owe their Formation to much the same Agent: yet the Matter, which constitutes each, is very different. For in the marine, that Matter is ever opaque; whereas in many of these, 'tis transparent. The marine, indeed, hold all a little Spar, or Crystal; but these terrestrial *Astroita* hold so much, as to be near wholly compos'd of it. *Vid* e. 90. *supra*. e. 94. 95. The fossil Corals are more terrene, and ordinarily of greater specific Gravity than the marine. Then there are fossil Corals, *Mycetia* and *Asteria*, consisting of Flint, Agat, Pyrites, and other Matter, much different from that of the marine.

e. 94. Another, from the same Quarry. The Edges of the Stars here are not quite so sharp or raised as in the former; and the Striae of the Stars communicate with, and pass into one another.

e. 95. Another, from still the same Quarry, little different, but that the Stars are not so depress'd.

e. 96. A very large sparry Nodule, outwardly of a brown Colour. cover'd over with Stars of the same Size and Figure with those e. 93. From the plough'd Lands of *Sherborn Northfield, Gloucestershire*. Having broke several Nodules of this sort, I find they consist within of a white, semi-pellucid, crystalline Spar. In some of these were Cavities; and these there had the Spar finely shot and crystalliz'd.

e. 97. A sparry Nodule divided into several Branches. 'Tis of the same Colour with the precedent, and starr'd all over like that. It much resembles a Species of a marine branch'd coralline *Astroite* as to its Shape and Stars. But this is externally brown, and that white; this of sparry, and that of coralline Matter. Found in *Stawell-Fields, Gloucestershire*. There is of this sort, branch'd, found pretty frequently in the plough'd Fields, call'd the *Cheffles*, near *Coln St. Allens, Gloucestershire*.

e. 98. A Branch of a sparry Nodule of like Constitution with the foregoing. 'Tis in shape round, almost two Inches long, and half an Inch thick, but tapering towards one end. At the other 'tis abrupt; appearing like a Branch broken off from a bigger Body. Plough'd Lands in *Yanworth-Fields, Gloucestershire*.

e. 99. A Piece of a Nodule consisting of Spar, white within, and brown on the Surface. This is set thick over with small round Cavities, appearing as if punch'd, the bottoms of which are flat and starr'd. On one side are *Vestigia* of stellar Pores passing towards the Center of the Stone. *Farmington-Fields, Gloucestershire*.

e. 100. 101. & 102. Two Pieces of a large sparry Nodule, with a stoney *Callimus* of a pale brown Colour, and oblong oval Figure, two Inches in length, and  $\frac{3}{4}$  of an Inch in Diameter, that was lodg'd in the middle of the Nodule. The Spar is semidiaphanous, white with a Cast of red, and made up of Plates wedged in with each other in various Positions. The external Surface is thick set with pretty large Stars. Found in a Stone-pit in the Earl of *Dyffers's* Yard, in *Northamptonshire*.

e. 103. A very large sparry Nodule externally of a brown Colour. It has somewhat of the resemblance of a large Champignon before 'tis open'd, bunching out into a large round Knob at one end, the part proceeding from it being less, round, and not unlike a Stalk. Much the greater part of it is cover'd over with Stars, very large, being half an Inch in Diameter. Found on the plough'd Lands near *Aulsworth, Gloucestershire*.

e. 104. Another Nodule, of like Colour, Texture, and Shape, but much less. The Stars in this are of the same bigness with those

those of the former, but sunk deeper in. Found on the plough'd Lands in *Sherborn-Northfield, Gloucestershire*.

PARTIS V. SECTIO IV.

*Astroita foraminosi, sive à Superficie ad interiora Corporum excavati.*

e. 105. A Body of a flat Figure, an Inch and a half thick, five and a half long, and three and a half in breadth. It consists of a grey Spar; but the Outside is brown. The two opposite flat Surfaces are cover'd all over, in an elegant manner, with Stars, not different from those of e. 94. except in bigness, these being generally  $\frac{1}{4}$  of an Inch in Diameter. Several of the Stars, especially on one of the flats, sink deep into the Substance of the Stone, making so many stellar Pores, with long parallel Striæ running up their sides from the bottom to the Surface, and there communicating with the Striæ of the neighbouring Stars all round. Some of these Pores pass the Substance of the Stone diametrically from flat to flat: and round the Edges of the Stone are long parallel Striæ passing it transversely. At the bottom of all the Stars on one of the flats there is a little striated Stud rising up in the very middle of them. 'Twas found in a Stone-Pit between *Oxford* and *Shotover-Hill, Oxfordshire*.

e. 106. A Piece of another, from the same Pit, little different, only to one of the Flats adheres a Body in Shape like that e. 102. but less. On this Body for the whole length of it, is a Row of stellar Ridges and Striæ, which let fall Rays down by the Sides of it till they meet with those on the Stone to which 'tis affix'd.

e. 107. A sparry Body, of a somewhat lighter grey Colour than the two foregoing, with Stars upon the two opposite Planes. On one side they are flat, and of the same sort with those Part V. Sect. II. on the other they are concave, but of different Sizes, from  $\frac{1}{8}$  to  $\frac{1}{2}$  an Inch in Diameter. Some of them pass deep into the Stone: and on the Sides are Striæ passing diametrically between the two opposite Planes. Found in the Highways near *Baziesley in Berkshire, near Oxford*.

e. 108. A grey sparry Body with Stars, about  $\frac{1}{4}$  of an Inch in Diameter, on the two opposite flat Surfaces. Some of them sink pretty deep into the Stone. In all parts of the Sides of this where broken, appear Lines very numerous and thick, which seem to be the Edges of long Plates pervading the Body diametrically from the Stars of one to those of the opposite Plane. On one side of the Stone these Plates are cross'd by others, so as to appear cancellated, very like some of the marine Pori. Found near *Scarborough-Castle, Yorkshire*.

e. 109. A sparry Stone of a blueish grey Colour, with Stars, much like those of the foregoing, on the two opposite Planes. All round the Sides of it are Canals, like parts of stellar Tubes, passing cross the Body. The Longitudinal Plates of these are in-



terfected by others exactly in manner of some of the marine Pori:  
Out of a Cliff on the Shores near *Whitton, Lincolnshire*.

e. 110. A Piece of a white sparry Body, on the Surface of which are Stars passing pretty deep into the Stone, about a quarter of an Inch in Diameter. The Striæ of these are not so deep and distinct as in the preceding; and in some are hardly perceivable. Found somewhere in the Road betwixt *Ensham-Ferry* and *Oxford*, where there were more of the same; but I cannot remember the Place more particularly.

e. 111. Another Piece from the same Place, little different, but that the Stars are generally less, and smooth, as if the Striæ were effaced, they hardly appearing.

e. 112. A flat Body, with hexagonal Cells somewhat above a quarter of an Inch over; and very much resembling an Honey-Comb. The Cells are prettily crenated or notch'd quite round the Edges; but not striated down to any depth. These Cells are pretty deep; and some of them pass quite thro' the Body diametrically. The Partitions of the Cells, where broken, are white; but all the rest of the Body is of a ferruginous Colour. Found at the Foot of *St. Vincent's-Rock*, near *Bristol*.

e. 113. Another with like Cells. The Partitions of these are compos'd of little Bullæ or Granules, of a glittering Spar, white, with a Cast of red. The Cells are all deep; and some of them pervade the Body diametrically. Found upon the Shores of the River *Ardin*, near *Leonards-Castle-Abbey*, in *Cumberland*.

#### APPENDIX.

e. 116. An Astroides of the foraminose kind, *Part 5. Sect. 4.* little different either in Substance or Texture from that e. 105. but this Stone is not quite half so big. Found near *Abbingdon*, in *Berkshire*. They are pretty common there.

e. 117. *Astroides Stellis prominulis*, much like that e. 84. only in this the Stars are something larger. Found on *Bullington-Green*, near *Oxford*. It belongs to *Part 5. Sect. 1.*

### C L A S S VI.

*Crystals, Spars, and crystalliz'd Gems.*  
Vid. *Preface* infra.

*The Classical Method of these Bodies.*

#### P A R T I.

*Incrustations of Spar, and other like Matter, upon Bodies in Springs, and Rivulets.*

#### P A R T



## P A R T II.

*Simple Spars, found in the perpendicular Fissures of the solid Strata.*

## P A R T III.

*Spar form'd into Plates.*

SECT. 1. Plates of Spar, plain, concreted upon the Stone of the Sides of the perpendicular Fissures.

SECT. 2. Plates of Spar, with *Tubera*, and Efflorescencies, upon them, concreted upon the Stone of the Sides of the perpendicular Fissures.

## P A R T IV.

*Stalactita, or Spar form'd into the Shape of Icicles.*

APPENDIX. Stalagmitæ, Drop-stones, or Spar form'd into small roundish Masses.

## P A R T V.

*Crystals, and crystalliz'd Spars.*

SECT. 1. Crystals, and Spars, crystalliz'd in an irregular Manner.

2. Spars, and Crystals, shot into a cubic Form.

3. Trigonal Pyramidal Talky Spars.

4. Hexagonal Pyramidal Spars and Crystals.

ARTICLE 1. Those that are white, or diaphanous.

2. Those that are colour'd, yellow, red, purple, black.

SECT. 5. Sparry and crystalline Pyramids, join'd Base towards Base by the Interposition of an hexagonal Column, adhering to Sand-Stone, diaphanous, and colour'd.

## P A R T VI.

*Spars, and Crystals, independent, and in Nodules.*

SECT. 1. Hexagonal, sparry, and crystalline Pyramids, join'd Base towards Base by the Interposition of an hexagonal Column, not adhering to any other Body, and without a Root.

ARTIC. 1. Those that are single, and apart.

2. Those that are join'd, several in one Mass or Nodule.

SECT. 2. Echinated, sparry, and crystalline Balls.

3. Concave, sparry, and crystalline Balls.

## P A R T VII.

*Spar of a strigated or ridg'd Form. And Spar shot into the Form of Erica or Heath.*

*The Names given to some of these Bodies by Writers, and others.*

*Petrefactions, f. 1. & seq.*

*Osteocolla Officinarum, f. 5.*

*Stalactites, or Stagonites, f. 58.*

*& seq.*

*— hollow'd, or fistulose, f. 55.*

*57.*

*— florid, f. 68.*

*— crystallized, f. 65†.*

*— of a red Spar, 66. 67.*

*Stalagmites, f. 47. 72\*. 72†.*

*Lapis Lazuli Saturni, f. 18.*

*Cauky Spar, f. 76\*.*

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|--|--|
| <i>Lac Luna Spar</i> , f. 46.                | <i>Concave Crystalline Balls</i> , f. 142.     |
| <i>Croystone</i> , f. 81.                    | & seq.   |
| <i>Pellucid Spar</i> , f. 28.                | <i>Crystal</i> , f. 99. 100*.                  |
| <i>White Spar</i> , f. 35†.                  | <i>Cornish Diamonds</i> , f. 97. & seq.        |
| <i>Water Spar</i> .                          | <i>Bristol-Stones</i> , f. 117.                |
| <i>Brown Spar</i> , f. 30.                   | <i>Topaz</i> , f. 177. 177*.                   |
| <i>Brown Sugar-Candy Spar</i> , f. 17.       | <i>Sapphire</i> f. 180.                        |
| <i>Rhomboid Spar</i> , f. 18. & seq.         | <i>Amethyst</i> , f. 92. 118. 178. 179.        |
| <i>Dog-tooth Spar</i> .                      | <i>Emerald</i> .                               |
| <i>Botryoid Spar</i> , f. 48. 49.            | <i>Selenites</i> , <i>Scheuchzeri</i> , f. 25. |
| <i>Echinated Crystalline Balls</i> , f. 134. | <i>Iris</i> , 129.                             |
| & seq.                                       |  |

EXTRACT of the Observations, relating to the Origin, Formation, and Natural History of Crystal, Spar, and the crystalliz'd Gems.

## OF SPAR.

### 1. The Uses of Spar.

- Spar*, absorbing Sulphur, in the Ores of Metal, in the Fire, promotes their Fusion.
- incrusted, call'd *Osteocolta*, used as a Conglutinator of broken Bones, f. 5.
- white, given in White-Wine in Cases of the Stone, and nephritic Affections, f. 18. 21.
- in the Cholic, f. 21.

### 2. The Place in which Spar is found.

- Spar*, in Fissures of Stone, f. 16. 18. & seq.
- in Fissures of Marble, x b. 1.
- in Fissures of Coal, f. 9. g. 17. & seq. — Of Canal Coal, g. 10.
- finely crystalliz'd on the Sides of the perpendicular Fissures of Coal, f. 108.

### 3. The various Colours of Spar.

- Spar*, white, f. 18. 20.
- with a Cast of yellow, f. 76 ⊖.
- yellow, f. 76†. 94. & seq.
- of a reddish yellow, f. 17.
- trans-lucid, green, f. 16. 65†.
- blue, f. 144.
- Stalactite*, red, out of an Iron Mine, f. 66. 67.
- Spar*, with a Cast of Purple, f. 91.
- with a black Hue, owing to Coal concreted with it, f. 108.

### 4. The Constitution, Origin, and Formation of Spar.

- The Constitution and Formation of *Spar*, f. 28, 29.
- Spar*, white, breaking in Rhomboids, f. 24.
- pellucid, breaking in Rhomboids, f. 25.

*Spar*, white, breaking in Plates, *f.* 29\*.

*Sparry Matter*, brought out of the Strata of Stone by Water, fix'd in successive Incrustations, and spread over the Sides of the perpendicular Fissures, *f.* 30, 31, 32, 34, 35, 36, 36\*.

*Sparry Incrustations*, with Tubera, and Efflorescencies upon them, form'd by Water on the Sides of the perpendicular Fissures, *f.* 36†. & *seq.*

*Spar* grows, and is form'd, to this Day, *f.* 83.

5. *The Constitution, Origin, and Formation of the Sparry Stalactitæ.*

*Stalactitæ* form'd, in the perpendicular Fissures, by *Sparry Matter*, brought out of the Strata by Water, *f.* 55. & *seq.*

———— form'd at this Day on the Top of Works deserted under Ground, *f.* 61, 62.

———— on the Top of a Brick Vault, *f.* 63, 64.

6. *Other Minerals, and Ores of Metals, incorporated with Spar.*

*Spar*, concreted with a yellow sulphurous Marcasite, *f.* 91.

———— concreted with Lead-Ore, *f.* 92†. 183. *Vide* Clais 6.

———— with Copper-Ore.

———— with Tin-Ore.

———— with Iron-Ore.

## OF CRYSTAL.

### 1. *The Figure of Crystal.*

*Crystal.* Its natural Form hexangular. When it assumes any other Form, that is owing to the Admixture of some adventitious mineral or metallic Matter concreted with it. *f.* 97. *Conf. Pref. infra.*

———— in a cubic Form, *f.* 87. & *seq.* This Form owing to Lead incorporated with it, *f.* 87. 92†. *n.* 132.

All other Variations of its natural Figure, owing to metallic Mixtures with it. *n.* 132.

### 2. *The Colours of Crystal.*

*Crystals*, clear and diaphanous, *f.* 99. 120. & *seq.*

———— with a Cast of Yellow, *f.* 87. 90†. 116. 128. 141\*. *n.* 132.

A Topaz, *f.* 177. 177\*.

This yellow Colour is owing to Lead incorporated with it, *f.* 87. 128. *n.* 132.

———— with a Cast of Green, owing to Copper, *f.* 93†.

———— with a Cast of Red, owing to Iron incorporated with it, *f.* 117. 118. 126. 129. 131. 138. 145.

———— with a Cast of Purple, owing to Iron, *f.* 91. 93. 119. 129. 141. *Conf. f.* 118.

———— of an Amethyftine Colour, owing to Iron, *f.* 92. 92†. 118. 176\*.

Amethysts, f. 178, 179.

—— of a deep black Water, f. 127. 129.

The various Colours of Gems.

## Spars, Crystals, and Crystalliz'd Gems.

### P R E F A C E.

Crystal was thought by the Antients to be only Water congeal'd, in long Tract of Time, into an Ice, harder, and more durable than the common. 'Twas for that reason they gave this Stone the very Name [κρύσταλλος] that they did to Ice. Plin. l. 37. c. 2.—“Cry-  
“stallum,—gelu vehementiore concreto. Non alibi certe reperitur,  
“quam ubi maxime hibernæ nives rigent, glaciemque esse, cer-  
“tum est; unde nomen Græci dedêre.”—Sexangulis nascitur la-  
“teribus.”—

Spar is call'd Flus by the German Mineralists: and by Agricola, and the other late Writers of Fossils, Fluor. Probably because they imagined this also to have been form'd, ex Fluido, or out of Water. In my Nat. Hist. of the Earth, Part IV. Consect. 6. &c. I have set forth the true Origin of Spar and Crystal: and shewn that Water is only the Agent that educes the Matter, of which they consist, out of the Strata, and compiles and forms it in the perpendicular Fissures. Nor are they less mistaken, who imagin'd Spar had the Name Fluor, à fluendo in Igne; for it will not melt, but calcines in the Fire. 'Tis indeed sometimes used, in the Fusion of Ores, like Lime, to absorb the Sulphurs that may be incorporated with them. By that means it removes indeed what would hinder the Fusion of those Ores, and so by accident promotes their Fusion: but is not really a Flux itself.

One sort of Spar is compos'd mainly of Lac Luna, incorporated with Crystal. Vide f. 41. f. 46. f. 70. & o. 105. *infra*.

Talc is likewise frequently found incorporated with Crystal and Spar: as in f. 29\*. & 29†. f. 30. f. 34. and probably in the Stalactites, f. 55. & seq.

There is in all Spar more or less of Crystal: Which renders it more or less diaphanous, in proportion to the Quantity of the Crystal incorporated with the Earthy, Stoney, Mineral or other Ingredients in the Composition of the sparry Mass.

## Spars, Crystals, and Crystalliz'd Stones.

## PART I.

*Incrustations of Spar, and other like Matter, upon Bodies found in Springs, rising from among Strata of Stone, or Rocks. [Confer. Nat. Hist. Earth. Part IV. Conf. 7, & 13.]*

*f. 1.* Three Cylindric Incrustations, found in a Brook proceeding from *Rushbank-Spring, Harrington-Grounds, in Northamptonshire.*

These, and the following, to *f. 5.* inclusive, have little *Spar* in their Composition; they consisting chiefly of a grey light earthy Substance; but being found with those that contain more *Spar*, and form'd in the same manner, I take the liberty to range these with them.

*f. 2.* Several others, of different Figures, found part of them in a Rivulet, the rest in a Marl-Pit, in a Field not far from the Church of *Norleach, Gloucestershire.* Some of these, being broken, shew the various Crusts, successively one within another. The Straws, or other slight Bodies, on which these Incrustations were made, are since, in Tract of Time, perish'd and disappear'd; the Place, where they were, remaining.

*f. 3.* The common Garden Snail-Shell incrustated over. Out of the same Rivulet, near *Norleach.*

*f. 5.* An Incrustation, seeming to have been on a Stick, since perished. This is the *Osteocolla Officinarum*: which is recommended by the common Pharmacologists as an Absorbent, and Conglutinator of broken Bones; whence it has its Name. Taken out of still the same Rivulet.

*f. 6.* A Land-Snail, incrustated over with a pretty hard fine Stoney Matter, mix'd with *Spar.* Found in that which is called the *Petrifying Spring*, near *Maidwell, Northamptonshire.* I have had several like Incrustations from the same Spring.

*f. 7.* Bits of Sand-Stone, Sticks, and other Bodies, incrustated over, and cemented together with a slight Stoney Matter with *Spar.* Found in the Head of a Spring in *Chedworth Town*, four Miles from *Cirencester, Gloucestershire.*

*f. 8.* A light Earthy, Stoney, and Sparry Matter, incrustated and affixed to Oak-Leaves. Found in a Brook near *Bricksworth, Northamptonshire.*



## PART II.

*Simple Spars found in the Fissures of the solid Strata.*

f. 9. Fine white Spar in Veins or Fissures of Coal; from *Mes-  
sham, Leicestershire*. Conf. f. 108. infra.

f. 10, 11, 12, 13. Plates of a grey Spar, found in the Veins or  
Fissures of Canal-Coal, at *Haigh, Lancashire*.

f. 16. A translucent green Spar. From a Fissure of the Strata of  
Stone, in the Copper-Mines, *Crosgill, Cumberland*.

f. 17. A glossy, talky, yellowish Spar, somewhat resembling  
brown Sugarcandy. Found in *Sir Ralph Dutton's Park, Sherborn,  
Gloucestershire*.

f. 17\*. Another like Spar, very ponderous. Found in the Pits  
of Fullers-Earth, near *Rygate, Surrey*.

f. 18. White Spar, from *Charter-House Liberty, Mendip*; found  
in the perpendicular Fissures, both with the Lead, and alone. The  
Physicians thereabouts call it *Lapis Lazuli Saturni*; and use it for  
the Stone in White-Wine, Dos. ʒ ss.

f. 19. White Spar. From a perpendicular Fissure in the great  
Limestone-Pit, *Dudley, Staffordshire*.

f. 20. Spar, white, with a Cast of brown. *Wooky-Hole, near  
Wells, Somersetshire*.

f. 21. Spar, almost as pellucid as Crystal. Out of a Lead-Mine  
at - - - - - in *Cumberland*. Here, and in *Yorkshire*, they use  
this fine and clean Spar, powder'd, in the Cholic; as also in Ne-  
phritic Cases, taken in White-Wine.

f. 24. White Spar, breaking in Rhomboids. From *Worksworth  
Lead-Mines in the Peak, Derbyshire*.

f. 25. Another Sample more transparent and crystalline. From  
the same Lead-Mine. I take this to be the *Selenites* of Dr. *Scheuchzer*,  
*Geogr. Physf.* and of some of the *German Mineralists*.

f. 28, 29. Two Pieces of a pellucid Spar, lined with black  
in such manner, as to shew the Order and Succession of the Mat-  
ter in the Formation of the Mass. From a Lead-Mine, near *Had-  
don, Derbyshire*.

f. 29\*. White Spar, breaking in Plates. Out of a Lead-Vein  
in *Newlands, Cumberland*.

f. 29†. Like Spar, but more shattery, and the Plates more apt  
to part. Out of another Lead-Mine, *Cumberland*.

## PART III.

*Spar form'd into Plates.*

## SECT. I.

*Plates of Spar, plain, incrusting on Stone on the Sides of the  
perpendicular Fissures.*

f. 30. A thin flat Plate or Crust of brown Spar. From *Ben-  
well Coalery, Newcastle*. It was twelve times as broad: and thus  
thin

thin throughout. It consists indeed of two Plates of *Spar*, a browner and whiter, successively apply'd; and striated a-crofs. 'Tis common to find *Spar* of this Constitution, spread over great Tracts of Stone in the Sides of Fissures in Quarrys and Mines.

f. 31. A grey Sparry Crust, beat off the Side of a Fissure in the Stone of *Pool's Hole*. *Peak, Derbyshire*.

f. 32. A whitish brown Sparry Crust, striated a-crofs, consisting of several thin Incrustations, and shewing the successive Application of each to other in the Formation of the Body, by Water running down the Side of a Fissure of Stone, on which this Crust was form'd and affix'd, in *Llany Monach-Cave*, near *Oswestry* in *Shropshire*.

f. 34, 35. Two Pieces of *Spar*, composed of several Crusts variously apply'd to each other. *Sherborn, Gloucestershire*.

f. 35†. White *Spar*, form'd into thin Plates, placed in very various manners, so that they intersect one another, and make Cells of different Forms and Capacities. The Cells have been fill'd with pale brown Earth, part of which is still remaining in them. From a Quarry near *Cadle Tor*, *Devonshire*. This fine Earthy Matter, coming forth of the Strata with the *Spar*, concurr'd to the forming the common Mass; but the earthy Corpuscles not being capable of concreting and consolidating, as the *Spar* did, remain'd loose: and when dry, was like a fine Powder, and easily dissipated. There was a great deal of this Sparry Matter, with the Cells thus fill'd with this Earth, in this Fissure.

f. 35\*. Like *Spar*. *Uppingham, Rutlandshire*.

f. 36. A whitish Sparry Crust, with semi-lunar Processes on the Surface of it, owing their Form to the dribbling of the Water that passed over it. The Convex of the Arches of these Processes hung downwards. From a Quarry near *Turk-Dean*, *Gloucestershire*.

f. 36\*. *Spar*, flat: with a Cast of Yellow; consisting of numerous thin Incrustations successively cast, by Water, each on other, very much like the *Spar* that composes the Septa or Partitions of the *Ludus Helmontij* that is found in *Sheppey Island*. *Harwich-Cliff*.

### PART III. SECT. II.

*Plates of Spar, with Tubera and Efflorescencies upon them, incrusted on the Sides of the perpendicular Fissures of the Strata of Stone.*

f. 36†. A large Knob, arising from a Plate of *Spar*, incrusted on the Side of a perpendicular Fissure in *Yanworth Quarry*, *Gloucestershire*.

f. 36\*. Two large oblong Tubera, arising from a Plate of *Spar*, incrusted on the Side of a Fissure of Stone in *Rancomb-Park*, *Gloucestershire*.

f. 37. A greyish brown Tuberous *Spar*. Out of a Fissure of a Stone-Pit, on the Road just by *Finchead-Abbey*. *Northamptonshire*.

f. 38. Another. *Wooky-Hole*, near *Wells*, *Somersetshire*.

f. 39, 40. Yellowish Efflorescent Sparry Incrustations on Stone, on the Side of a perpendicular Fissure of a Quarry near *Yanworth*, *Gloucestershire*.

f. 41. A Body consisting of *Spar*, with some *Lac Luna*, found frequently in these Quarries, incorporated with it. 'Tis finely imbellish'd with Tubercles and Efflorescencies. Out of a Fissure of a Quarry near *Norleach*, *Gloucestershire*.

f. 42. Another, not much different. Out of a Fissure of a neighbouring Quarry.

f. 42\*. A ramose Efflorescence, of a fine white *Spar*, found hanging from a Crust of like *Spar*, at the top of an old wrought Cavern in one of Mr. *Bathurst's* Lead-Mines on *Molder-side-Hill*, in *Arkendale*, *Yorkshire*. There was Water, trickling down thence, by means whereof this was form'd. Its Formation must have been recent, and since that Cavern was made.

f. 42†. A Tuberos Efflorescence, of a fine white *Spar*, found adhering to a Crust of like *Spar*, on the Side of a Fissure in a Lead-Mine, at - - - - - in *Cumberland*.

f. 43, 44. Two white Sparry Incrustations, with Efflorescencies, in Form of Shrubs upon each, form'd by the trickling of Water in the Fissure of a Stratum of Stone, to the Sides of which they, with many more of the like, adher'd. Out of the same Quarry with the last.

f. 45. Another, very thick set with Sparry Efflorescencies. The same was continued over the Side of a Fissure, to the Extent of 3 or 4 Foot. *Yanworth-Quarry*, *Gloucestershire*.

f. 46. Another, with like Efflorescencies. This is extremely light, and is compos'd chiefly of that Matter which Dr. *Plot*, and some other Naturalists, call *Lac Luna*, incorporated with a little *Spar*. Found in a Fissure of a Quarry on the West-Side of *Oundle*, a quarter of a Mile from the Town. *Northamptonshire*.

f. 50. A brown Sparry Efflorescence, near Sir *Christopher Musgrave's* House by *Kirkby-Steven*, *Westmorland*.

f. 52. Very luxuriant Efflorescencies of a brown *Spar*, made by Water, at the foot of a Hill under a Hollow of an old Ash in *Maidwell-Dale*, *Northamptonshire*.

f. 53. From *Knaresborow*, *Yorkshire*. Out of that call'd the *Petrifying Spring* there.

f. 53\*. A Piece of the Stoney Accretion on the Walls of Bath, mention'd by Dr. *Guidot, de Thermis Britan.* p. 165. In several Parts of the City-Walls of Bath, in a Garden on the South-West Side of the Town, are Stoney Accretions, and some pretty hard. They increase and are enlarg'd daily: and consist only of the arenaceous Matter that is beat down by the Weather from the upper Stones; which, falling upon the lower, is concreted and affixed upon them, by means of the interposing of a little Sparry Matter that drains out of the upper Stones: or rather, out of the Earth on the Inside of the Wall; which is several Foot higher than that on  
the

the Outside in the Garden. Where the Stones in the Wall, above, are not fretted, and the Sand beat off, these Accretions are nowhere found. Nor are they every where found, where the Sand is beat off above: but only where there are Jets in the Stone, for the falling Sand to settle upon, or where the Wall bulges out to receive it. And 'tis observable, that the largest Accretion is at a kind of Angle of the Wall, which is much expos'd and worn by the Weather, and where there is a Bulge near the Ground. I shew'd this to Dr. *Guidot*, and he assents to these Conjectures about the Formation of these Accretions.

#### PART IV.

*Stalactitæ, or Spar, form'd by the dropping of Water, in Fissures, and subterraneous Caverns, into the Shape of Icicles.*

f. 55. Part of a *Stalactites* of a Cylicndric Shape, and about an Inch in Diameter; having adhering to it a Piece of the Stone from whence it hung in the Fissure of a Quarry at *Windrush, Gloucestershire*. 'Tis fistulous, having a Foramen at the Axis for the whole length of it. 'Tis striated from the Surface to the Foramen: and is compos'd of many thin cylindric Crusts, induced each on other successively, by the Fall of Water, bringing *Spar* with it out of the Strata.

f. 56. A *Stalactites*. *King's-Weſton, Gloucestershire*. This was near two Foot long: of much the same Constitution with the former; but not fistulous.

f. 57. A *Stalactites*. From a Lead-Mine, at *Hopton* in the *Peak, Derbyshire*. This is of a fine white *Spar*, has a Fistula at the Axis, to which the Striæ tend, and which the Crusts surround: and is much of the Shape of the *Belemnites fusiformis*; but larger, being a Foot in length.

f. 58. A *Stalactites*, of like *Spar*, but smaller, and not fistulous; having adhering to it part of the Stone, of the Side of the Fissure, from whence it hung during its Formation. From the same Lead-Mine, at *Hopton*.

f. 59. Another, of like *Spar*. This has a Fistula, not at its Axis, but to one Side; to which all the Striæ tend. From the same Lead-Mine.

f. 61, 62. Two fine slender *Stalactitæ*, found hanging down from a black Stone, at the top of an old deserted Vault, in *Benwell Coalery, Newcastle*. They were form'd since the Vault was made, and are a Proof that these *Stalactitæ* are form'd to this day.

f. 63, 64. Two very light, thin, fistulous *Stalactitæ*, found hanging down amongst others, in great number, from the Top of a Brick Vault, between the Gardens at *Cliveden-House, near Maidenhead, Bucks*. These afford another incontestible Proof of the present Growth of the *Stalactitæ*.

f. 65. A small *Sparry Stalactites*. From the Devil's Arse in the Peak.

f. 65\*. Four *Stalactita*, of Constitution much like that of f. 55: only the *Spar* is somewhat whiter, and more transparent, found hanging down from a Jet of a main Vein in a Lead-Mine, in *Arkendale, Yorkshire*. They hung near each other: and grew till they became contiguous, and united.

f. 65†. Two *Stalactita*, having their exterior Surface set all over with small Crystals. The larger being broken, shews the interior *Spar*, of which it consists, to be of a green Hue. Out of another Lead-Vein, *Arkendale*.

f. 66, 67. Two small red *Stalactita*. Out of an Iron-Mine, near *Cloverwall*, in the *Forest of Dean, Gloucestershire*.

f. 68. A white *Sparry Stalactites*, with a fine *Sparry Efflorescence* at the Top of it. From *Benwell-Coalery*, near *Newcastle*.

f. 70. A white *Spar*, with two Processes of *Stalactita* hanging down from it. Out of a Fissure in *Yanworth-Quarry, Gloucestershire*. Here are some Appearances of *Lac Luna* in this: as indeed there is in much of the *Spar* of the Country hereabouts.

#### APPENDIX.

*Stalagmites, Drop-Stones, or Spar form'd into small roundish Masses.*

f. 72. White *Sparry Stalagmita*. *Wookey-Hole*, near *Wells, Somersetshire*. They lay on the Floor, but seem to have been Efflorescencies fallen down from the Sides of this Grotto.

f. 72†. Four grey *Sparry Stalagmita*. *Elden-Hole, Peak, Derbyshire*.

#### CLASS VI. PART V.

*Crystals, and Crystalliz'd Spars.*

SECT. I. *Spars crystalliz'd in an irregular manner.*

f. 73. White *Spar*, semipellucid, consisting of flattish Pieces, set edgeways each by other. There was a great Quantity of this *Spar*, about 6 Foot deep, in a Quarry near *Pickering, Yorkshire*.

f. 74. Like *Spar*, but the Pieces less. From a Stone-Pit near *Quindle, Northamptonshire*.

f. 76x. Like *Spar*, out of a perpendicular Fissure of a Lead-Mine, *Arkendale, Yorkshire*.

f. 76\*. White *Spar* shot into small Columns, *Wookey-Hole*, near *Wells, Somersetshire*.

f. 76○. Like *Spar*, but with a Cast of yellow, and Sparks of Lead-Ore. From a Lead-Vein, *Newlands, Cumberland*.

f. 76++. *Spar*, brown, columnar, in three Orders or Crusts, one on another. From the Marble Quarry at *Caddown, near Plymouth*.

f. 76+.



f. 76 †. Spar, columnar, yellow, with part of the Stone, of the side of the Fissure, whereon it concreted, adhering to it. From *Hartly Lead-Mines, Westmorland*. This sort is not near so frequent here as the cubic is.

f. 76 ·X. A white, opaque, cauky Spar, shot or pointed. *Hinxton, Cornwall*.

f. 76. ♀. White columnar Spar. Out of a Stone-Pit near *Sherborn, Gloucestershire*.

f. 77. White Spar, found in the Fissure of a Quarry near *Stroud, Gloucestershire*. The Shoots arising from each side of the Fissure, obliquely, met and united in the middle.

f. 78. Out of a Quarry near *Sherborn, Gloucestershire*. There's part of the Stone of the side of the Fissure, whereon it concreted: There are in this Stone numerous Fragments of Shells, and Pellicles of the Ova of Fishes. The Shoots of the Spar seem to be trigonal: and if so, this belongs to *sect. 3. infra*.

f. 81. Spar, irregularly crystalliz'd in small Sparks: and call'd *Croyl-Stone*. From *Worksworth in the Peak, Derbyshire*.

f. 82. Spar, from the side of a Fissure, shot into round Tubercles; somewhat larger than Peas, with their Surfaces set all over with small Crystals. *Portland great Quarry*.

f. 83. Spar, part shot into very small Crystals: part into Tubera and Efflorescencies in a very uncommon manner; struck off the Top of an antiently wrought Cavern of a Lead-Mine, of Mr. *Bathurst, on Molder-side-Hill. Arkendale, Richmondshire*.

## CLASS VI. PART V.

### SECT. II. Spars, and Crystals shot into a Cubic Form.

*Androdamas \* Plinij.*

f. 87. Crystal, shot into Cubes, about  $\frac{7}{8}$  of an Inch in Diameter. They are transparent, excepting a Cast of Yellow that appears in all of them. They were found concreted together in great numbers on the side of a perpendicular Fissure in a Lead-Mine, near *Kirby-Stephen, Westmorland*.

f. 88. \*88. Two larger Cubes, with others less. From the Lead-Mines of Sir *Chr. Musgrave, at Hartly Castle, Westmorland*.

f. 90. Two Clusters of Crystalline Cubes. Also four single Cubes; from the same Mine.

f. 90†. A Cluster, larger to an Inch in Diameter; with a Cast of Yellow. *Hartly-Castle Lead-Mines, Westmorland*.

f. 91. Cubic Spar, with a Cast of Purple: and some Grains of a yellow sulphurous Marcasite. From the Lead-Mine at *Nens-Head in Cumberland*. These Cubes have probably, with the Lead,

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\* “ *Androdamas Argenti Nitorem habet, ut Adamas, quadrata, semperq; Tessellis similis.*” Plin. L. 37. c. 10. p. 740.

which

which determined the Crystal to shoot into Cubic Figures, an infinitely small Admixture of Iron, to which the purple Hue is owing.

f. 92. A large Cube of a brighter Amethystine Colour, from *Red-Groves*. Lord Bishop of *Carlisle*.

f. 92+. Several Cubes of an Amethystine Hue, crystalliz'd confusedly together. From the Lead-Mines of *Crossfells*, *Cumberland*. Out of a Lead-Vein: and there are Masses of Lead-Ore, in the part, whereon these Cubes are crystalliz'd.

f. 93. Several small Cubes, very fine, ting'd with a slight Purple. From a Vein of Iron-Ore in the *Skrees*, *Cumberland*.

f. 93+. Small Cubes, very fine, some ting'd Green. From a Vein of Copper-Ore in the *Skrees Mountain*, *Cumberland*.

## CLASS VI. PART V.

### SECT. 3. Trigonal, Pyramidal, Talky Spars.

f. 94. Spar of a yellow Hue, shot into numerous trigonal pointed Shoots of various Sizes; found growing to one side of a perpendicular Fissure of a Stratum of Freestone in digging, for laying a Foundation for Sir *J. Guise's* House at *Randcomb*, *Gloucestershire*. On one side of this appear several trigonal Surfaces, which perhaps are the Bases of the trigonal Shoots. This sort is also found in *Switzerland*: Dr. *Scheuchzer* calls it *Fluor Crystallinus trigonus*. *Specim. Lithogr. Helvet.* p. 29.

f. 95. Lesser trigonal Shoots of a yellow Spar. Out of the great Quarry in *Portland*.

f. 96. Others, not quite so yellow. *Fairford*, *Gloucestershire*.

## CLASS VI. PART V.

### SECT. 4. Hexagonal Pyramidal Spars, and Crystals.

#### ART. 1. Those which are white or diaphanous.

f. 97. Hexangular Sprigs or Shoots of Crystal of various Sizes, some clear, others a little soil'd, with an Accretion of Tin, rising out of a white Spar, which was affix'd on the side of the Stone in a perpendicular Fissure, in *Carrack-Gloose* Tin-Mine, *Cornwall*. They grew on the sides of the Load of Spar, which stands parallel to that of Tin-Ore. They are commonly found in great Numbers in Caverns of the Spar. The People there call them *Cornish Diamonds*. There is much Water in the Load of Spar and Ore. This Hexangular, is the natural Figure of Crystal. When it assumes any other, that is owing to the admixture of some adventitious mineral or metallic Matter concreted with it.

f. 98. A single Column, or Shoot, very large, being three Inches in Length; and 1 and  $\frac{1}{2}$  in Diameter near the Base. From the same Fissure.

f. 99. Five others, not so large; but, excepting the Soil on the Surface, most of them near as transparent as the Alpine Crystal. From the same Fissure.

f. 100. Part of a large hexangular Sprig, with Bodies in it, black, slender, round, and very much like Hairs. *Hinxton, Cornwall.* These Bodies are, doubtless, compos'd of Tin, which assumes that black Colour when crystalliz'd.

f. 100x. Part of another, broke so as to shew the internal Constitution of it, which is much like that of the Marcasite, i. 44. *infra.* From the same Tin-Mine as the precedent.

f. 100†. Several Sprigs of Crystal, of different Sizes, from a perpendicular Fissure in *Carrack-Gloose Tin-Mine, Cornwall.*

f. 100\*. Others, more transparent, than those found in the Tin-Veins; from *Tindagial, Cornwall.* These were found with Spar, in a perpendicular Fissure, in the Slate Quarry at *Denny-Bowl, Cornwall.*

f. 100++. Two Crystal Sprigs or Columns, and part of two others, crossing one another at diverse Angles. During the Time of their Formation part of the Matter, which compos'd each, being within the Verge of the Matter of the other, the Columns were incorporated with, and lock'd into each other. The like Accident is observable in some of those, f. 97. & f. 100†. From a perpendicular Fissure in *Carrack-Gloose Tin-Mine, Cornwall.*

f. 101. Part of an hexagonal Shoot of white Spar, very fair. Out of a Lead-Vein, at - - - - in *Wales.*

f. 102. An hexagonal crystalline Shoot, with black Lines in it. From *St. Vincent's Rock.* Being broke, in one Part, it shews somewhat of the Texture of the Stone, and the manner of its Concretion.

f. 103. Three Shoots, out of a Fissure in *St. Vincent's-Rock, Bristol.*

f. 104. A Mass with large Pyramids. From a Lead-Mine, at *Cashborne, Cumberland.*

f. 106. Found on the Wafts, between *Alston-Moor,* and *Galmesby, Cumberland.*

f. 108, 109. Spar, on Coal, finely crystalliz'd. From *Farrington Coal-Pits, Somersetshire.* In some of the Crystals there appears a fine black Matter, probably some fine Parts of the Coal, incorporated with the Crystalline.

f. 112. Spar, crystalliz'd, with part of the Stone whereon it concreted, on the side of a Fissure, in a Quarry, near *Cheltenham, Gloucestershire.*

f. 113. Hexagonal crystalline Shoots, small, but very sparkling. Out of the Fissure of a Quarry by *Keynsham, Somersetshire.*

f. 114. A Cluster of crystalline Shoots, very beautiful. Out of the Fissure of an Iron-Mine, near *Cloverwall,* in the Forrest of *Dean, Gloucestershire.*

f. 114x. Hexagonal crystalline Shoots, with part of the Stone, of the side of the Fissure whereon they grew, near *Bangor.* Sent me by the Lord Bishop of that Diocese.

f. 114†.

f. 114†. Found in a Vein, along with the Iron-Ore. o. 90, in the *Skrees, Cumberland*.

f. 114\*. In a Fissure of a naked Rock, *Newlands, Cumberland*.

f. 114++. A Shoot of Spar, hexagonal; with hexagonal Lines, one within another, at the Basis where 'twas parted from the Rock to which it grew; shewing the Order and Manner of the successive Application of the constituent Matter of every side of the Body at the same time, in its Formation. Found near the River *Palmer, Cornwall*.

## CLASS VI. PART V.

### SECT. IV.

ART. 2. *Hexagonal Pyramidal Crystals, and Spars colour'd, Yellow, Red, Purple, Black.*

f. 115. A Cluster of Hexagonal sparry Shoots, of a brownish Hue. Out of a Fissure of a Stratum, in a Stone-Pit, near *Farmington, Gloucestershire*.

f. 116. Others, yellow. Out of the Fissure of a Quarry, near *Sherborn, Gloucestershire*.

f. 117. Others, with a Cast of Red, and in some Parts black, concreted on a Crust of Iron-Ore. From a Fissure in *St. Vincent's Rock, by Bristol*.

f. 118. Others, with some of the Crystals Red, others Amethystine; concreted on a Crust of Iron-Ore, growing on the side of a perpendicular Fissure in *St. Vincent's Rock, Bristol*. Those different Colours are owing to the different Proportions of ferreous Corpuscles uniting with the Crystalline in the Concretion.

f. 119. Others, white, transparent; but some of them with a very slight Tincture of Purple. From - - - in *Cumberland*.

## CLASS VI. PART V.

SECT. 5. *Pyramids, some diaphanous, others colour'd, Hexagonal, join'd Base towards Base, by the Interposition of an hexagonal Column, adhering to Sand-Stone.*

f. 120. 121. In these two the Crystals are very clear, and diaphanous, from an Iron-Vein or Fissure, in *St. Vincent's Rock, Bristol*.

f. 123, 124. Two others, the Crystals little different from the preceding; out of an Iron-Vein, at *Stainton, in Fourness*.

f. 126. Another, with Iron-Ore adhering to it. Out of the same Vein. Some of these are ting'd red, by Iron Particles, concreting with the Crystalline, in the Formation of the Stone.

f. 127. Another, out of an Iron-Vein in *St. Vincent's Rock, Bristol*. The Crystals in this are of a fine deep black Water.

f. 128. Another, the Crystals small, but very brilliant and fair; some of them white and pellucid, but much the greater number of



of a bright yellow; form'd on Iron-Ore. But the yellow Tincture, being owing to Lead, shews Particles of this Metal had incorporated with the Crystalline. Nor can that be thought strange in a Country where Lead-Ore is so frequent and obvious.

f. x 128. Another, found in a perpendicular Fissure of a Stratum of Stone in *Langron Iron-Mine, Cumberland.*

## CLASS VI. PART VI.

Spars, and Crystals, found loose, independent, and in Form of Nodules.

SECT. I. *Hexagonal sparry and crystalline Pyramids join'd Base to-wards Base by the Intervention of an Hexagonal Column, not adhering to any other Body, and without, what the Lapidaries call, a Root.*

### ARTICLE I.

Those that are single, and apart.

f. 129. Seven of these Bodies single, diaphanous, white, purple, red and black. All found about *Kings-Weston, Gloucestershire.* Vid. *variarum Iridum Icones ap. Aldrov. Mus. p. 941. & 942. & inter ceteras, Iridis nigra, in Agro Senensi nata. Conf. p. 939.*

### ARTICLE 2.

Those that are join'd, several in one Nodule.

f. 130. Many, join'd in a very fair Cluster, very bright and pellucid, *King's Weston, Gloucestershire.*

f. 131. 132. 133. Three Clusters, *King-Weston.* These have a Cast of Red.

## SECT. 2. Echinated Crystalline and Sparry Balls.

### P R E F A C E.

*There are sometimes found in the Chalk-Pits of Kent and Surrey Pyritæ thus echinated. See the 2d Addition of Native English Fossils. N° 1. & seq. Vid. etiam Pyritem ærosum subrotundum echinatum. Joh. Bauhini de Fonte Bollenfi, l. 4. p. 53.*

f. 134. A Body of an orbicular Shape, thick set round, on all Parts of its Surface, with crystalline hexagonal Pyramids, *Kings-Weston, Gloucestershire.*

f. 135. Another, somewhat larger. *Ibid.*

f. 136. Another, scarce half so big. *Ibid.*

f. 137. Another. *Ibid.*



- f. 138. Four, still less ; white, with a Cast of red. *Ibid.*  
 f. 139. Another, found on Plough'd Lands, upon *Cotesfold* Hills near *Rancomb, Gloucestershire*.  
 f. 141. Part of a large Cube of purple Spar, cover'd with a Crust of white, semipellucid, crystalliz'd Spar. From *Cashbourn Lead-Mines, Cumberland*.  
 f. 141\*. Part of a less Cube, ting'd with yellow, and cover'd with a Crust of crystalliz'd Spar, very bright and sparkling ; found in a Fissure among the Ore in that they call the Silver-Mine at *Beer-Alston, Devonshire*.

### SECT. 3. Concave crystallin Balls : or Nodules with Spar and Crystal within them.

#### P R E F A C E.

Alonso Barba of *Metals*, l. 1. c. 15. mentions a sort of Stone in *Perraguay* and *Buenos Ayres*, lying 2 Fathom deep, which they call *Coco's*, because resembling the *Coco-Nut*. They are hard, heavy, and about as big as a Man's Head. On the Inside of them grow *Amethysts*. These *Coco-Stones* seem to be of the same Sort with those of this Section.

f. 142. An orbicular Body, consisting of a ruddy sparkling Spar, full of large Pores. 'Tis of about the bigness of a Wallnut. From *Flatholms*, an Island in the River *Severn*.

f. 143. A Piece of a much larger. From the same Place.

f. 144. A Piece of another, consisting of an outer Crust of ruddy talky Spar, and of blue, talky, foliaceous Spar, within. From *Barry*, on the West side of *Severn*, in *Glamorganshire*. There is a larger one of this kind upon the Top of the Cabinet. Copper concreting with Spar, and Crystal, imparts a blue to them. Of this there are Instances in the Veins of Copper-Ore.

f. 145. A Nodule, orbicular, near 3 Inches in Diameter, concave, the Crust without ferruginous, within Sparry, with a Cast of red,  $\frac{2}{3}$  of an Inch in Diameter, the inside lined with a crystalliz'd sparkling Spar. Found in a red Earth, in which was a Mixture of Iron, at *Abson* in *Gloucestershire*, not far from *Bath*.

f. 146. A Segment of a much larger, the Crust of a rust-like ferruginous Hue ; the inside thick set with large hexagonal crystalline Pyramids. There are several more of these upon the Cabinet. They are found of all Sizes to the Bigness of a Horse's-Head, in *Clack-Mill-Field*, at *King's-Wesson, Gloucestershire* ; two Foot deep in the Earth, over loose rubble Stones.

f. 147. 148, &c. to 176, inclusively, are Parts of like concave Nodules or Crystals broke out of them, to shew the various Crystallizations, the various Colours, and Sizes of the Crystals. All from the same Place.

f. 176\*. Spar, shot upon the Stone at the side of a perpendicular Fissure, 60 Foot deep, in *Warren's Works, St. Nyots, Cornwall*. The Root or Part that was next the Stone is white: the Tips of the Shoots all of an Amethystine Hue.

f. 177. A Topaz, or Shoot out of a Ball like the foregoing, cut and set into a Ring. *Kings-Weston, Gloucestershire*.

f. 177\*. Another Topaz. Out of a like Stone. From the same Place.

f. 178. Four Stones, cut and polish'd, out of a concave Ball from the same Place. They are of the Colour of the Amethyst.

f. 179. A Stone, crystalline, deep, and with a pretty good Water. It has a fine soft Amethystine Tincture; but not equal, and alike throughout. 'Tis cut and set in a gold Ring. Out of a like concave Ball. *Ibid*.

#### CLASS VI. PART VII.

*Spar of a strigated or ridged Form. Spar shot into the Shape of Erica or Heath.*

Fluor Strigatus.

Fluor Ericaformis.

f. 181. This was Part of a Mass of the Bigness of a Man's Head, and most of the Shoots were thus large. This and the 6 following were found amongst various other sorts of Spar, in a large Vein of Lead-Ore, about 30 Fathom deep, in one of Mr. *Bathurst's* Mines in *Arkendale, Yorkshire*. I never saw any of either the strigated or Erica-form, in any other Place. 'Tis heavy as indeed all the rest are, and doubtless hold one of the white Metals, Lead, Tin or Silver.

f. 182. *Ibid*.

f. 183. There are some Sparks of Lead-Ore adhering to the Root of this. *Ibid*.

f. 184. *Ibid*.

f. 185. In this the strigated Spar is form'd upon the Tops of the Ericaformis; of which I saw several other Instances from this Mine.

f. 186. Fluor Ericaformis. *Ibid*. This also is pondrous, and doubtless has Lead, or some other white Metals incorporated with it.

f. 187. Fluor Ericaformis, ponderous as the precedent. *Ibid*.

#### APPENDIX to CLASS VI.

*Vein-Stones, or Bodies consisting of Spar, earthy Stones, or other Matter ever of fine Constitution, found lodg'd in the Veins, or Perpendicular Fissures of the Strata along with the Ores of Metals and Minerals.*

Of Earths, Umbres and Ochres, found in the Metallic Veins. vid  
Clafs 1.

Of Stoney Matter, Marble, Mica, found in the metallic Veins. vid.  
Clafs 2. and Clafs 4. Part 1.

#### VEIN-STONES.

† f. 1. A Mafs, white, with a Cast of Green, having externally a red Soil upon it very much resembling the *Cornish* Steatites, only 'tis of the hardness of Alabaster. Out of a perpendicular Fissure in the Lead-Mines, *Dunfell, Westmorland*. Dr. *Nicholson*, Lord Bishop of *Carlisle*.

† f. 2. A stoney Mafs, grey, with a Cast of purple; having in it Spar purple and grey, Specks of a black Mineral, and some small Sparks of Lead-Ore. Out of a Fissure of the Lead-Mines of . . . . . in *Derbyshire*, where 'tis called *Toftan*.

† f. 3. A dusky, grey, stoney Mafs, smooth and fine, much like the Shiver of the North. Found in the same Fissure with i. 40. near *Buttermere* in *Cumberland*.

† f. 4. A stoney Mafs, of a deep brown Colour, with a Cast of red. Found in a small Fissure, which is a String of the grand Vein in which the Wadd lies, in *Borrowdale, Cumberland*. The Place out of which this was taken was at the Distance of about 20 Foot from that Vein.

† f. 5. A Body porous and stringy, black with a Cast of red. 'Tis more ponderous, seeming to have something of Iron in it; otherwise, as to its Constitution, it exactly resembles the white Pumice found on the Top of *Pico Teneriffe*, being porous, and fibrous, and the Fibres woven with each other in the manner of that. From . . . . . in *Cornwall*.

† f. 6. Another, of a pale rust Colour, with the Surface tuberos and uneven, porous and very light. Found in a perpendicular Fissure in a Quarry near *Lancegloss, Cornwall*.

† f. 7. A Pumice, black, light and porous, found in the same perpendicular Fissure with the precedent. This sort is frequently found at the Top of the Veins or Loads of Tin in *Cornwall*. It looks exactly like a Cynder or Scoria that has pass'd the Fire: and on one Side it has upon it a Crust that appears as if 'twas vitrified. It very much resembles the black Pumice found in the Island of *Teneriffe*.

† f. 8. A Mafs, partly stoney and partly caukey, of a pale brown Colour. There is a Thread of Led-Ore runs through one part of it. Out of the same Vein in which the Shot-Lead-Ore, N<sup>o</sup> 120. *infra* was found in *Arkendale*.

† f. 9. Another, part stoney, white, with Spots of black, part of white Spar. Out of a String, or small Fissure, of the *Skrees, Cumberland*. This has the Appearance of a Marble.

† f. 10. Spar, white, with Veins of green, and some Sparks of Marcasite. From Mr. Courtney's new Copper-Mine. in the Parish of Molland, near South-Molton, Devonshire. This seems to hold about  $\frac{1}{10}$  Copper.

† f. 11. Spar, white, brown, and green, with some small Sparks of Lead-Ore. From the Skrees, Cumberland.

## CLASS VII.

### *Bituminous Fossils.*

#### PART I.

Those that are of a more lax and coarse Constitution, and yield a grosser or pitchy Matter when heated. 1. *Lapis Piceus*, or Pitch-Stone. 2. *Lapis Ampelites*, *Obsidianus*, or Candel. 3. *Lithonthrax*, or Coal.

#### PART II.

Those that are of a more dense, and fine Constitution, and yield an Oil.

SECT. 1. *Gagates* Jet.

2. *Electrum*, *Succinum*, Amber.

## CLASS VII.

### *Bituminous Fossils.*

#### PART I.

Those that are of a more lax and coarse Constitution, and yield a grosser or Pitchy Matter when heated. *Lapis Piceus*, or Pitch-Stone. *Lapis Ampelites*, *Obsidianus*, or Candel. *Lithonthrax*, or Coal.

g. 1. *Lapis Piceus*, the Pitch-Stone; found near Bentel in Shropshire. Of this Stone, with the Method of extracting the Pitch forth of it, see *Obs. relating to the Nat. Hist. of Minerals*, p. 1. This I broke off a large Piece, that was flat, 3 Inches thick, and appear'd to have been part of a Stratum. *Conf. r. 6, & 7. infra.*

g. 2. A Bituminous Plate, compos'd of Crusts, alternately yellow and black, form'd by Water driveling and incrusting on the outside of the Gin-Pump of Maflyn Coal-pits. *Flintshire.*

g. 10. Coal, very black, fine and hard, so as to take a pretty good Polish. This is the *Ampelites* of the Shops, the *Lapis Obsidianus* of some late Writers, and is called Canal Coal at Haigh in

*Lancashire*, where this was got. There are, in some small Figures of it, thin Plates of a greyish Spar.

g. 15. Coal, from *Benwell* near *Newcastle* upon *Tine*. There are in it Flakes of a shining, yellow, sulphurous *Marcasit*. †

The chief Ingredients of Coal are an Ochre and Bitumen. *Conf. a. 77. supra g. \* 20. infra.*

g. 16. A brown gritty Stone, with small Spangles of a white silvery Talc in it. From *Bransly-Brow* near *Whitehaven*. There are in the Cliff out of which this was taken several Layers of Coal and Stone of this sort lying alternately; and I observed a Termination of a *Seam*, as they call it in the North, or a Stratum of Coal, where it divided into several thin Plates, the Measure of the Aggregate of all which amounted to the whole thickness of the said Stratum. They pass'd on thus for about 7 or 8 Yards where most of them (for some broke off short, and did not pass quite through) run again into a Stratum of Coal of like Substance and the same thickness with the former. This Piece shews some thin Plates of the Coal in it, and I have underneath given a slight Adumbration or Sketch of the Thing as it was in the Cliff.



g. 17. Coal, shatter'd and thick set with Veins of white Spar. From a Coal-pit at . . . . near *Newcastle*. See Samples of Coal from *Farrington Pits*, *Somersetshire*, with Veins of Spar, and Spar shot into Crystals, f. 108, & f. 109. *supra*.

## CLASS VII. PART II.

*Those that are of a more dense and fine Constitution, and yield an Oil.*

### SECT. I. Gagates, Jet.

g. 30. A Piece of Jet, very fine and black, with Impressions of *Ammonita* upon it. || From *Whitby*, *Yorkshire*. This Body *Pliny* describes under the Name of *Gagates*, l. 26. c. 19. and perhaps again l. 27. c. 10. under the Name of *Gemma Samothracia*. "*Samothracia insula ejusdem nominis gemmam dat nigram, ac sine*

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† Sulphur is very frequent in Coal, that Fossil ever containing Bitumen, which is an Ingredient of Sulphur.

|| Upon the outsides of some Pieces I have observed Impressions of small Bivalves.

" pen-



“*pondere, ligno similem.*” The Jet about *Whitby* lies in the Strata of Alum-Stone. They search for it chiefly in the Fronts of the Cliffs, as they are bared and beaten to pieces by the Sea. The Person that gave me this Account had been very inquisitive after it, and indeed has had the Monopoly of it for several Years. He had observed it from 1 to 10 Fathom in depth. As to the natural Form of it, 'tis generally flat; some of it round, lessening towards the Edges, so as somewhat to resemble a Millstone: but 'tis most commonly oblong, and lessening on each side towards the Edges, so as to carry some Resemblance of a Rib ‡. This last splits lengthways, having Fibres directing their Course that way, in such manner as to constitute a Grain not unlike that of some Wood. Tho Jet is found in the Alum-Mines; as also in the very same Cliffs that the Amber is. *Conf. g. 47. & seq.* 'Tis also, like that, found beat forth by the Sea, and lodg'd upon the Shores. The Jet lies in the Alum-Stone sometimes flatways, sometimes edgeways. I have seen of it that has had a very hard sparry Matter in it.

I have by me a large Piece of Jet, from *Whitby*, 3 Inches and a half in thickness. Towards one side it becomes thinner, like *g. 31.* 'tis parted into two by a thin Vein or Plate of Vitriol, which liquefied, being kept in a humid Place, so that the Mass parted into two. In the Parts next the Vein the Jet split easily into thin Plates, exactly resembling those of Wood, and being of a like Grain and Texture.

*g. 31.* Jet of the Rib-like kind, *Whitby*. I have observ'd of this kind in Breadth from 1 Inch to 7, in Thickness in the Middle from  $\frac{1}{10}$  of an Inch to half a Foot. Nay I have seen four or five Pieces that were 8 or 9 Inches thick. I never saw any above two Foot in Length, but Mr. *Jackson* assures me, he has traced it for 8 or 9 Foot. It is usually streight, but some I have seen inflected like a Rib. The two Edges are usually parallel, and the Body of equal Breadth in all Parts. It is also equally thick in the Middle for the whole Length.

*g. 32.* A Piece of Jet gradually thinning towards one Edge. *Whitby* Cliffs.

## CLASS VII. PART II.

### SECT. 2. *Electrum, Succinum*, Amber.

#### EXTRACT.

Amber a Nodule, invested with a Coat, call'd *Rock-Amber*, *g. 47. 48.*

The Coat being worn off by the Agitation of the Sea, 'tis called *washed Amber. g. 47.*

‡ *Pyritæ Costæformes. l. 65.*

Amber digg'd up at Land. g. 45.

—— found beaten by the Sea out of the Cliffs on the Shores.  
g. 40. & seq.

*The Place where Amber is found.*

*Sheppey-Island, Kent.* g. 40. 41.

*Coast of Norfolk.* g. 42.

*From the Shores near Plimouth.*

g. 43.

*On the Shores of - - - Yorkshire.*

g. 44.

*Clay-Pit, Richmond, Surrey.* g. 45.

*Shores of - - - Norfolk.* g. 46.

*Shores near Whitby, Yorkshire.*

g. 47. 48. 49. 50.

*Shores near Yarmouth.* g. 51.

A M B E R.

g. 40. 41. Two small Pieces of clear Amber found on the Shores of the Isle of *Sheppey, Kent.*

g. 42. Another, somewhat larger, found on the Coast of *Norfolk.*

g. 43. A small Ball, above half an Inch in Diameter, cut out of a Piece of fat or white Amber, and polish'd. Found on the Shores near *Plimouth.* This is that sort that is chiefly used in Medicine: and the Powers of *Succinum præp. Ol. Succini, & Sal succini volat.* are sufficiently represented by the common Pharmacologists.

g. 44. An oval Plate, cut out of a Piece of clear Amber, about an Inch long, polish'd. Found on the Shores of - - - in *Yorkshire.*

g. 45. Two Samples of Amber, brown and foul, found at least 30 Foot deep in the Pit where they dig Clay to make Tiles at *Richmond* in *Surrey.* The Workmen call it *Rosin.* There is in some pieces of it a Salt, that I take to be Vitriol; which starting and shooting, makes the Mass very apt to dissolve, and fall to Pieces, of which I have seen several Instances. *Conf.* g. 47. *infra.* One of these Samples being very little broken, and is cover'd with an exterior Crust, after the manner of all the true Nodules. Exposed to Fire, this sort burns, emits an Oil, and a Smell exactly like that of Amber, but exerts no electric attractive Power, when rubb'd and heated.

g. 46. A Piece of grey or fat Amber, from the Shores of - - - *Norfolk.* Mr. *Mérret.* I saw a Piece of fat Amber, found on the Shores near - - - in *Kent,* that weigh'd 47 Ounces, and was the most firm and free from Flaws, as well as the most beautiful I ever saw. The finest from *Dantzick* was much inferior to it. Indeed I have seen several Pieces of Amber found in different Parts of *England* that much surpass'd any I ever saw from Foreign Parts.

g. 47. Amber of a deep yellow, near brown; environ'd with a thick Crust of Amber, foul, brown, and very like that g. 45.\* This Amber was found at the Foot of a Cliff on the Shores near *Whitby*, *Yorkshire*. The Person who gave me this, had been long enquiring into the Nature of this Body; and he is very positive, not only that all Amber is originally lodg'd in the Cliffs and Strata, and beat thence by the Agitation of the Sea, but that it is all, when first beat out, covered with a Crust, after the manner of Flints, and some other Fossils. And all that which is found naked, and uncovered, has had the Crust worn off by the successive Agitation of it upon the Shores by the Sea. This last the People who gather it here, call *Wash'd-Amber*; as they do the former, or crusted, *Rock Amber*. Which they find ever near the Cliffs, and but just fresh beat forth, as they do the *Wash'd-Amber* more remote, and further out upon the Beaches and Shores, where it has been longer exposed and toss'd about. The same Person assured me he had several Times observed young *Flies* and *Gnats*, in Amber that he took up on these and the *Scarborough* Shores.†

g. 48. White or fat Amber, covered with a coarse brown Crust. Found in a Cliff on the same Shores.

g. 49. Fat Amber, naked, also from the Shores of *Whitby*.

g. 50. Amber, very fine and clear, of a reddish yellow or flame Colour. From *Whitby* Shores.

g. 51. Amber, of a very bright yellow, with a Cast of red, having in the Body of it several Spangles, of a paler yellow, but wonderfully bright and shining. This was found on the Shores near *Yarmouth*. 'Tis turn'd and fitted up for the Head of a Cane, and is by much the most beautiful Piece of Amber I ever saw.

\* These Masses, composed entirely of the coarse crusty Amber, bear some Analogy with those Nodules that are not uncommonly found in the Chalk-Pits of Kent, among the Flints; and are entirely composed of the same Matter of which the Crusts of those Flints are composed.

† The Amber is beat out of the same Cliffs that the Jet is, Conf. g. 30.

## C L A S S VIII.

## S A L T S.

## CLASS VIII. PART I.

*The common Fossil Salt, which is of the same Nature with the Marine Salt, and the Fossils that contain it.*

gx. 1. 2. Two Pieces of transparent Rock-Salt; one white, the other red. From - - - - - in *Cheshire*.

gx. 3. A pale brown Earth, with very small Micæ in it. It has a saline Taste; and doubtless contains in it a marine Salt. Pidgeons are continually picking at it. *Thenford, Northamptonshire*.

gx. 4. A Piece of Stone of a brown Colour, with little Perforations in it. It tastes manifestly Salt. *Oxendon Gravel-pit, Northamptonshire. Mr. Morton.*

## CLASS VIII. PART II.

*The Fossils that contain Alum.*

*Of the Methoa of extracting Alum. Vid. L. Erkern. l. 5. c. 10. Conf. Cl. 8. App. 1. Preface infra, concerning the Nature of Alum. Of the Alum-Works of Civita Vecchia, and Solfatura, M. Geofroy Hist. de l'Acad. des Sciences, 1702. p. 20. 21.*

## ALUMINOUS FOSSILS.

g.x 10. 11. Two Pieces of the Clay taken from the Vents of the fired Coal-pits at *Fenham, near Newcastle*. They are burnt to a Brick-like Substance, and have an aluminous Salt, sticking to them, that was sublimed and brought from beneath, by the Fire that pass'd forth at those Vents.

g.x 12. An aluminous Salt collected from the same Vents.

g.x 13. The common Alum-Stone, or Mineral wrought for Alum. 'Tis of a dark grey Colour, having in it numerous small shining Sparks. From the Duke of *Buckingham's Works, near Whitby, Yorkshire*.

g.x 14. Another, somewhat paler. *Ibid.*

g.x 15. Another, still rather paler. *Ibid.*

## CLASS VIII. PART III.

*The Fossils that contain Vitriol.*

*Of the Method of extracting Vitriol. Vid. L. Erkern, l. 5. c. 10. Of the Vitriolic Pyrita, Conf. Clafs 9. infra. Of the Nature and Constitution of Vitriol. Vid. App. 1. ad Clafs 8. Of the Medical Properties*

*Properties of Vitriol, administred either internally, or externally.  
See the Medical Writers.*

#### VITRIOLIC FOSSILS.

g. x 20. Native capillary Vitriol, of a green Colour, amass'd into a Nodule about the bigness of a Nutmeg. From the Lead-Mine near *Mam-Tor*, in the *Peak*. Sir *George Wheeler* formerly shew'd me some of this sort found, in considerable Quantity, in sinking a Well, in a Common call'd the *Road*, near *Chareing*, betwixt *Maidstone* and *Canterbury*, in *Kent*. There were found likewise small *Cornua Ammonis* in a Stratum of Clay.

g. x 21. Native capillary Vitriol, of a pale brown Colour. From the Coal-pits at *North-Byerly*, *Yorkshire*. Mr. *Fitz-Roberts*.

g. x 22. Native capillary Vitriol, part white, and part green; also from a Lead-Mine near *Mam-Tor*, in the *Peak*.

g. x 23. Native Vitriol, capillary, part of a green, part of a pale brown Colour. From the Canal Coal-pits near *Haigh*, *Lancashire*.

#### CLASS VIII. PART IV.

*The Fossils that contain Nitre.*

*Of the Method of boiling Earth for Saltpetre, and draining out the Salt.* L. Erckern, l. 5. c. 1. & seq.

#### NITROUS FOSSILS.

g. x 30. A brown, light, porous, friable Stone yielding Nitre. Mr. *Fezreel Jones*.

g. x 31. Another like Body from - - - - - in *Denbighshire*. 'Tis found, in vast Quantities, from five to fifteen Yards deep, for a hundred Yards in length, and near twenty in breadth. It lies to the Day, rake and coarse, i. e. in an Interval betwixt two Rocks; by which is, I suppose, meant a perpendicular Fissure.

#### CLASS VIII. APPENDIX I.

##### SULPHUR.

##### PREFACE.

*There is in the Earth a Salt which may fitly be call'd Sal acidum Fossile. This is the Basis of Sulphur, Alum, and Vitriol; the simple Salt, extractd out of any of these three indifferently, is the same: and is capable of constituting either of the other, with the Addition of a small Proportion of a Bituminous, Cretaceous, or Metallic Matter.*

*Sulphur is produced by only incorporating an oily or bituminous Matter with this Salt.* Vid. g. 15. supra.

*Alum is produced by joining a cretaceous, or other like earthy Matter with it.*

*Vitriol,*



*Vitriol, by addition of a metallic Matter. If Iron be made use of, the Vitriol will be green; if Copper, blue.*

## APPENDIX II.

### ARSENIC.

g.\* 20. A Mineral, white, part in form of Dust, and part in small Masses. It appears to be chiefly Arsenic. 'Twas taken forth of the grand Vein of the Copper-Marcasit in *Goldscalp, Cumberland*. There was not much of it. What I observed, was sticking upon the Sides of the Vein, brought thither by the Water that drain'd in, and was perpetually dribbling, and dropping off from it.

## CLASS IX.

### METALLICO-SALSA.

#### PART I. PYRITÆ.

#### PREFACE.

*The Pyrites has its Name from πυρ; which denotes Fire. For, these Bodies holding Sulphur, such parts of this, as happen to be loosen'd upon striking fire, are immediately kindled, burn, and make an addition to the Spark. Which is the reason that the Pyritæ, upon Elision, give fire much more plentifully than Flints, or other like Bodies, that have little or no Sulphur in them, ordinarily do. The Arab Naturalists express this Body in their Language by the Word Marcasit. For distinction sake, I have taken the liberty to call those that are independent, in form of Nodules, and lodg'd in Strata, Pyritæ; and those that are found run in the Veins, or perpendicular Fissures, Marcasits.*

*Out of the Pyritæ found plentifully on the Coasts of Essex, Kent, Suffex, &c. which are beat out of the Cliffs by the Agitation of the Sea, and are as well found in digging accidentally in many of the Inland Parts of those Counties, is drawn that vast Quantity of Vitriol, made use of by Dyers in striking their Colours, by Refiners for making their Menstrua, and by Surgeons, Apothecaries, and other Artificers. In what Vitriol differs from Alum, I have shewn in its proper place. App. 1. to Cl. 8.*

*The Pyritæ of Kent and Essex, &c. yield, upon Tryal, a small Quantity of Gold and Silver; and some of them a little Copper. As to Iron, I have found some few that have yielded one eighth of that Metal. I could never perceive any Arsenic in the Pyritæ; in which they differ from the Marcasits, most of which contain more or less of that Mineral.*

## EXTRACT.

Names vulgarly given to the Pyritæ. *Iron-Stones*, *h.* 33. *Fire-Stones*, *h.* 34. *Gold-Ore*, *h.* 39. *Horfe-Gold*, *h.* 4.

A dusky grey Pyrites, cover'd with a Crust, after the manner of other Nodules, *h.* 36.

Sea-shells in the Pyritæ, *h.* 35.

Pyritæ moulded in Shells, both turbinated and Bivalves; see the 2d Part of this Catalogue, of the extraneous Fossils.

Pyritæ, found in a Stratum of Chalk, *h.* 6. 7. 11. 31.

———— in a Stratum of Earth.

———— in Shiver, *h.* 43.

———— in the midst of a Stratum of Stone, *h.* 16.

———— in Gravel, *h.* 17.

A Pyrites incorporated with a common black Flint, *h.* 21.

———— having in its Centre a white semi-pellucid Spar, *h.* 1.

———— having its Surface shot into Angular Figures, tending towards Cubes; with some Grains of Lead concreted with it, *h.* 1. *vid. h.* 38. 41.

Pyritæ having their Surface shot into angular pointed Figures, *h.* 14. 19. 26. 30. 32. 45.

———— with Septa, in manner of the *Lodus Helmontij*, *h.* 28. 29.

———— form'd after the manner of the coralloid *Astroites*, *h.* 4.

———— form'd after the manner of the *Astroites coralloides undulatus*, *h.* 20. 41.

I found small Pyritæ in form of the common *Fungi maritimi coralloides*, on the Coast of *Sheppey-Island*, *Kent*, *e.* 47. 48. *supra*. But they are since dissolv'd and fallen to pieces.

———— of a tessellated or cubical Figure, *h.* 43. 44.

A Pyrites of a faint yellow, green, and blue, as holding some Admixture of Copper, *h.* 23.

———— holding Copper, *l.* 65.

———— of a yellow, shining, Brass-like Completion, *h.* 1. 8.

———— of an Iron, or Rust-Colour, *h.* 3. & *seq.* 12. 23.

———— brassy, with the Substance uniform, not striated, *h.* 1.

———— brassy, striated from the Surface to the Axis, or Centre, *h.* 8. 11. 21. 30. 31.

———— consisting of brassy shining Plates that break in Rhombs, *h.* 45.

## PYRITES.

*h.* 1. A large round Pyrites of a very bright brass-like Appearance, beset with several Tubercles, these and the whole Surface being shot into angular Figures tending towards Cubes. There are several Grains of Lead scatter'd through the Body of it. Within 'tis of a shining greenish Yellow. The Substance uniform,  
not

not striated. In the very Centre of the Ball is a Lump of white semi-pellucid Spar of the bigness of a Nutmeg. Mr. *Flamstead*. From - - - - - *Derbyshire*. ['Tis perish'd, and fallen to pieces; the Salt starting, and getting loose.]

*b.2.* Another less, of a Figure near oval, the Colour not so bright. Found on the *Isle of Greans*, in the Mouth of the River *Thames*.

*b.2\**. Another, globular, the Tubera more depress'd, about an Inch in Diameter. 'Tis of a shining Copper-like Completion. Found on the Shores of *Thanet-Island*.

*b.3.* Another, the Surface of a Rust-colour, rising into several gross Tubercles. 'Tis of an oblong Figure, and, both in that, and the Bigness, it nearly resembles the Kidney of a grown Calf. Being a little broken in that part, which answers to the Pelvis, it appears within of a shining Brass-like Constitution. Found about 40 foot deep in the great Chalk-pit at *Greenhythe, Kent*.

*b.4.* Another, also of a Rust-colour outwardly. 'Tis about 4 Inches long: of a cylindric Figure; but a little crook'd, and somewhat swelling at each Extreme. At each end of it is a pretty large Cavity, in the middle, surrounded with several smaller, all striated after the manner of the marine and fossil *Astroite* and *Fungi Coralloidei*, from their Centre to their Circumference. Found in a Chalk-pit near *Cherry-Hinton*; where others of like Figure are frequently met with. The Workmen there call these Bodies *Horse-Gold*.

*b.5.* Another, of the same Colour, two Inches long, and of a cylindric Figure. In the middle 'tis somewhat rough, but smoother at each end. At one end, in the very middle, is a small Apophysis, or Stalk; on the other, likewise in the middle, a small Cavity, as if such a one had grown there too, tho' now broke off. From the same Chalk-pit.

*b.6.* Another, of the same Completion and Figure, but a little thicker and shorter. At each end is a Stalk rising out of a small Cavity. Out of a Chalk-pit by *Gravesend, Kent*.

*b.7.* Another Pyrites, of the same shape, only a little crook'd; of a dusky Rust-colour. Its Surface is thick set with small angular pointed Shoots. There are Vestigia of the Stalk at one end, tho it be now wanting. Being broke at the other end, the interior Constitution appears, partly of a rusty, and partly of a brassy Hue. 'Tis not striated. From the before-mention'd Chalk-pit, near *Cherry-Hinton*, by *Cambridge*.

*b.8.* Another Pyrites, little different in any respect from *b.5.* and *6.* Being broken, its interior Constitution appears. 'Tis striated from the Surface towards the Axis of the Cylinder; and of a brassy Colour, with a purple Calk. I do not exactly remember where I found it; but 'twas in some of the Chalk-pits down the River, *Thames*.

*b.9.* Another, thicker somewhat than *b.6.* and little above an Inch long. In other respects, 'tis little different, except that there are

are no Vestigia of Stalks at either end. From the Chalk-Pit near *Cherry-Hinton*.

*h. 10.* Another of a globose Shape, and bright rust Colour. 'Tis near two Inches in Diameter. The Surface rises into several round Tubercles pretty large, some of which are striated from the bottoms upwards. Out of a Chalk-Pit beyond *Deptford*, on the Entry of *Black-Heath*.

*h. 11.* Part of another of the same Shape and Bigness. Within 'tis of a brassy Hue, and striated from its Center to the Circumference. From a Chalk-pit, near *Croydon*, in *Surry*.

*h. 12.* Another of an oval Figure, about an Inch in length. The Surface tuberos, and of a dusky rust Colour. From - - - in *Norfolk*.

*h. 13.* Another Pyrites of the same Colour, and tuberos in like manner. 'Tis globular, and near an Inch in Diameter. Found in *Oxendon Fields, Northamptonshire*. Mr. *Morton*.

*h. 14.* Another of near the same Shape and Complexion. The Surface of this is smoother, and finely shot into small angular Figures. *Black-Heath, near Woolwich*.

*h. 15.* Another also globular, its Surface very smooth and polite, of a dusky brown Colour near black. Found upon the plough'd Lands in *Weekly Fields, Northamptonshire*. Mr. *Morton*.

*h. 16.* Another of a roundish Form, a little broken. 'Tis throughout of a shining brassy Complexion. 'Twas found in the middle of a Stratum of Stone at *Amble-side, Westmorland*.

*h. 17.* Another of the same Constitution and Colour, only not so bright. *Weston supra Welland, Northamptonshire*. This was found in digging in Gravel.

*h. 18.* Another of a compress'd Figure, round: its Constitution and Colour like that of the immediately preceding Pyrites.

*h. 19.* Two small Pyritæ, of irregular Figure, and an extreme bright Brass-like Complexion. The Surface shot into angular Figures. *Sheppey-Island, Kent*.

*h. 20.* A very curious Pyrites, of a brown Colour, with a slight shining brassy Gloss. 'Tis near globular, and about an Inch in Diameter. Its Surface rising in an elegant manner into Ridges, undulated, and striated from their bottom to their top, very much like some sorts of the undulated coralline *Astroites*. From the Shores of the Island of *Sheppey, near Minster*.

*h. 21.* Part of a Pyrites, striated from the Center to the Circumference, of a greenish brass-like Complexion, adhering to the common black Flint. *Sheppey-Island, Kent*.

*h. 23.* Another likewise flat, but larger. Externally 'tis of an Iron-Colour: within a faint green, blue, and yellow, with small brassy Sparks. Found near *Weymouth*.

*h. 24.* A Pyrites of a round, compress'd or lenticular Figure, and a dark brown Colour. 'Tis about an Inch in Diameter from Edge to Edge. 'Twas found on the Shores of the Island of *Sheppey*:

py: where I have seen several others of like Figure, but generally less.

*b. 25.* A Pyrites of the same Colour and Shape, placed in the Cavity of another of an hemispheric Figure, in much the same manner as an Acorn in its Cup. From the same Shores.

*b. 26.* Another of an oblong Shape, about three Inches in Length, and one in Diameter. 'Tis of a ferruginous Colour, with some intermixture of a light brown. Its Surface rises into large Tubercles; and the whole is thick set with small pointed Studs. From the same Shores.

*b. 27.* A Pyrites of a rust Colour, composed of several Tubera clustered together in an irregular manner. This is less ponderous than these Bodies usually are. From the plough'd Fields of *Thorpe-Malfor, Northamptonshire*. Mr. Morton.

*b. 28.* A light brown stoney Body, with Veins of a dusky Pyrites running on the Surface and pervading the whole Substance of it, much after the manner of the Septa of the *Lodus Helmontij*. From the Shores of the Island of *Sheppey, Kent*.

*b. 29.* Another like Body, the Veins disposed in a very beautiful and elegant Manner. From the same Shores.

#### A P P E N D I X.

*b. 30.* A Piece of a Pyrites of a pale rust Colour, striated, or rather consisting of Fibres, tending from the Center to the Surface, and being of different Lengths, they render the Surface unequal; the longest joining, form pointed angular Bodies, with which 'tis studded in an elegant manner. Out of a Chalk-pit beyond *Greenwich, Kent*.

*b. 31.* A Pyrites of a deeper or redder Rust-colour. This is somewhat bigger than a large Walnut, in Figure near globular, only that its Surface is tuberos and unequal. Part of it being struck off, it appears to be striated within, its Striæ tending from the Surface to the Center. Found in a Stratum of Chalk near 100 Foot deep, in the great Chalk-pit at *Northfleet, Kent*.

*b. 32.* Another, from the same Pit, less, otherwise not different, except that the Tubera on the Surface are generally angular, terminating in so many Points, and therein much resembling crystalliz'd Bodies. Chalk-pit by *Charlton, Kent*.

*b. 33.* Another small one, oblong, and flat. 'Tis of a grey Colour, with a Cast of Green: and thick set with small shining brassy Sparks. Found loose on the Shore near *Scarborough Spaw*. The Inhabitants call these *Iron-stones*.

*b. 34.* Another about two Inches long, and  $1\frac{1}{2}$  over. The Surface not so scabrous as *b. 31.* & *32.* but pretty smooth, though rising in large Knobs. 'Tis of a brown Colour, but darker where 'tis worn: and has in some places Spots of white. Found  $\frac{1}{4}$  of a Mile South of *Outhorn* in *Yorkshire*, where these are call'd *Fire-stones*.

*b. 35.*



*b. 35.* Another of a dusky grey Colour, but in some Places shining and brassy. On the Surface of it is the Impression of a small Tellina : These and other Shells being here commonly found in these Bodies. It lay 40 Fathom deep, in *Benwell-Coalery*, about 2 Miles from *Newcastle*.

*b. 36.* A Piece of a round Body. The whole was about three Inches in Diameter. 'Tis of a dark grey Colour, near black, and cover'd all over with a Crust  $\frac{1}{4}$  of an Inch thick of a lighter Colour. This Crust is in some Parts, both of its Surface and Mass, thick set with small Parts of a shining brassy Appearance. Found by *Hacknests*, not far from *Scarborough*.

*b. 37.* A Pyrites, flat, having its Surface studded over with small Tubercles. 'Tis of a greenish Colour with a slight brassy Cast. From the Brook at the North End of *Welford*, *Northamptonshire*. *Mr. Morton*.

*b. 38.* Another of the same Colour, but somewhat more brassy and shining. The Surface rises in almost all parts into small angular Bodies, tending towards a cubical Figure. From *Outhorn*, *Yorkshire*.

*b. 39.* Another, very small, of a grey Colour, with many Parts of a shining brassy Hue. From *Spitton-Cliff*, *Yorkshire*. The Inhabitants call this sort *Gold-Ore*.

*b. 40.* A large Pyrites, very uncommon, and extraordinary. 'Tis covered with a Crust of a reddish Colour, and about  $\frac{1}{2}$  of an Inch thick. 'Tis broken, and its interior Substance appears elegantly variegated with a dark grey and a light brown, of which the former is the Ground, the other appearing partly in Spots and partly in irregular Veins. Each Colour is very distinct. There seems to be something of a resemblance between the Constitution of this Body and  $\pm d. 10$ , &  $14$ . In the reddish Crust, and the neighbouring Parts, are several shining brassy Spangles. Found on the Shore near *North-Shields*, *Northumberland*.

*b. 41.* A Pyrites, of a rust Colour, about the bigness of a common *Sevil-Orange*. Its Surface is very unequal, tuberos, and undulated not unlike the *Brainstone*, or the *Aspreites maritimus Coralloides undulatus* of *Boccone*, *Obs. Nat.* p. 142. The Undulations are composed of thin Plates set by one another in much the same manner as in those Bodies. Some Part of its Surface is set with small Cubes. Where broken, it appears of a yellow shining Brass-like hue. From *Beacon-Hill*, in *Wiltshire*.

*b. 42.* Another of a darker Colour, near round: and of the bigness of the largest Wall-nuts. Being broken, it appears to be striated within from the Surface towards the Center: with a white shining Metallick Appearance. This was found, at *South-floke*, near the River *Thames*; where they are common, and yield *Vitriol*.

*b. 43.* A Pyrites of a rust Colour, cubic, and  $\frac{2}{10}$  of an Inch in Diameter. These are found commonly lodg'd in the Beds of Shiver, in *Yorkshire*, and *Cumberland*. This was found near *Carlisle*.

b. 44. Another cubic Pyrites; larger than the former, and of an Iron-Colour. Found near *Carlisle, Cumberland*.

b. 45. Part of a Pyrites, large, brassy, and shining; consisting of Plates that break into Rhomboid Figures. 'Tis covered over with a Crust, black within, without yellow, with a Cast of Red. Found near the Tin-Mine of *Wheal-and-Coats-Luggon, Cornwall*.

## CLASS IX. PART II.

### *Marcasites.*

#### PREFACE.

*Of the Marcasite, see the Preface to Class IX. Part I. and to Class XI. Part I.*

*The Sulphurous Marcasites, and, in particular those call'd in Cornwall, Mundick, all hold Copper, more, or less. When that Metal is in such Quantity as to compensate the Pains and Charge of Working, the Mineralists call it not a Marcasite, but a Copper-Ore; of which there are some Instances in the following Class.*

#### EXTRACT.

1. *Of the Colour, and external Appearance of the Marcasites.*

A *Marcasite*, cubic, yellow, shining, call'd by the *Cornish Miners* *Copper-Grains*. i. 42.

—Yellow, brassy, call'd in the Peak *Brasil-Ore*. i. 48.

—Yellow, brassy, call'd by the *Tinners of Cornwall, Mundick*, and yellow *Mundick*, i. 15. 46.

—of a whitish or pale yellow, call'd by the *Cornish Tinners*, *white Mundick*. i. 22 \*.

—call'd in *Cumberland, Grey-Ore*. i. 24.

—of a yellow, glossy, brassy-like Hue. i. 1, 9, 31, 36, 48, 52.

—changeable, purple, blue and green. i. 10, 11, 17, 31, 38, 50, 51.

—of a bluish Colour. i. 27, 37.

—of a grey Colour, i. 22 \*, 23, 24, 25.

2. *Of the external Figures of the Marcasite.*

A *Marcasite* shot into a cubic Figure. i. 1, 42.

—shot into Grains. i. 4.

Small Grains of *Marcasite*, in an hard earthy Matter, grey with a Cast of Green. i. 14, 35, 45.

A *Marcasite* of a frigated or ridg'd Form. i. 41.

— with botryoid Efflorescencies. i. 38.

3. *Of*

## 3. Of the internal Texture of the Marcasite.

*Marcasites*, made up of thin Plates, laid one on another. *i.* 36, 38, 44.

—Fibrous, with a Grain like that of Wood. *i.* 26.

—of a plumose Texture. *i.* 57.

## 4. Of the Origin and Place of the Formation of Marcasites.

*Marcasites*, are all form'd in perpendicular Fissures. *i.* 38.

—in Veins in Cannel-Coal. *i.* 12. 29.

## 5. Of the other Fossils incorporated with Marcasites.

*Marcasite* with black Talc, Mock-Lead, *Blende*, *Galena inanis*, or as the Cornish Tinnners call it, *Tin-Glass*, *i.* 37, 48, 53, 54, 55, 56. *Blende*, will neither calcine nor melt; but abides the Fire, and all the Alkaline Fluxes. *i.* 56.

*Marcasites*, having Spar incorporated with them. *i.* 19, 20, 21, 22, 22\*, 29, 31, 35, 37, 38, 45, 48, 50, 53, 56.

—having with them Spar crystalliz'd. *i.* 35, 57.

A *Marcasite* with red Crystals. *i.* 47.

*Marcasites*, all of them hold more or less of Sulphur. *i.* 23, 24.

—holding Arsenic. *i.* 23, 24.

—probably yielding Bismuth. *i.* 15, 22\*, 25.

—with a greenish Æruginous Matter. *i.* 34. 53.

*Mundick* yields some Copper. *i.* 15, 22, 22\*. 53.

A Tin *Marcasite*. *i.* 49.

*Marcasites* holding Tin. *i.* 51, 52.

—holding a little Lead. *i.* 53.

—with Lead-Ore. *i.* 47.

—with Iron-Ore. *o.* 99.

—with Bismuth. *i.* 15, 16, 17, 23, 24, 25. *Conf.* *i.* 54, 55.

—with Selenites. *d.* 46.

—with Flints.

—with Asbestos + *d.* 9.

—with Coal, *g.* 15.

## M A R C A S I T Æ.

*i.* 1. A cubical *Marcasite*, the Cube about  $\frac{2}{3}$  of an Inch in Diameter, and of a pale yellow Colour, with a metallick Gloss, and appearing like Brais. 'Twas found amongst others of like Figure, adhering to Slate-Stone in its Fissures at *Kentmire*, near *Kendal*. This has the Root or Mark of adhesion to the side of the Fissure, off which 'twas broke. The cubic *Pyritæ*, being found loose and independent, have not that Mark. Therein consists the difference. "*Pyrites Coloris Aurichalci, Figura quadrata, seu similis Tesseræ.*" Aldrov. Mus. l. 4. p. 574.

i. 3. A *Marcasite*, of a bright Brass-like Hue, crystallized in an observable manner, the Angles and Sides irregular. From - - - in *Cumberland*.

i. 4. A *Marcasite* of a deep yellow Colour, shot in some Parts, into Grains which are confused, and their Figure irregular. *Minehead, Somersetshire*.

i. 5. Another, much like the former. *Minehead, Somersetshire*.

i. 6. Another also of like sort, shot upon a soft dusky grey Slate much saturated with Sulphur. From *Haigh in Lancashire*.

i. 8. Another of like sort from another Pit near *Haigh*. The Texture of the Grains, and Application of the Plates to one another, very observable.

i. 9. Another, the Shoots of a shining brassy yellow, confused, but very fine, and tending towards a cubic Figure. *Blogasfon-Work, Cornwall*.

i. 10. Another of like kind, but the Shoots of a changeable Colour, betwixt a purple, blueish and green. *Blogasfon-Work, Cornwall*.

i. 11. Another, from the same Mine, and of the same sort, only the Colours in this are more vivid.

i. 12. Veins, of *Marcasite*, pretty thick, and numerous, in a Piece of Cannel-Coal, from *Haigh, Lancashire*.

i. 13. A *Marcasite*, the Shoots very pure and yellow. From a Coal-Pit near - - - in *Somersetshire*.

i. 14. Another, the Grains lying in an hard Earthy Matter of a greyish Colour with a greenish Cast. From - - - *Cornwall*.

i. 15. A *Marcasite* of a very pale yellow Cast, pretty free from terrestrial Mixture, and by the manner of the Grain seems to hold some small Proportion of Bismuth. *Reedamore-Work, Cornwall*. This, and the following sorts, are of the same Nature with those now wrought at the Copper-Works, in vast Quantity, with Sea-Coal, at *Redbrook in Gloucestershire*. 'Tis found plentifully, in the perpendicular Fissures, all over *Cornwall*. It yields them from 1 in 14, to 1 in 24. To this, and most other *Marcasites*, they there give the Name of *Mundick*.

i. 16. Another, equally fine, but of a much deeper yellow. *Chefwater, Cornwall*.

i. 17. Another, of the same Colour, with an Intermixture of Purple. *Ibid*.

i. 18. Another, of an high yellow Colour. From a Copper-Mine at - - - - - in *Cumberland*.

i. 19. Another, yellow, with a Cast of green, having intermix'd with it an equal Proportion of Spar. From - - - - - near *Bristol*. Mr. *Southwell*.

i. 20. Another, of like sort, the *Marcasite* and Spar in near an equal Proportion. Found in sinking a Sough-Pit at *Haigh, Lancashire*.

i. 21. A *Marcasite*, of a paler yellow Colour, with an Admixture of white Spar; and, as it seems, of Iron. From a Fissure, some

some of the Stone adhering on each side of the Mass. Out of a Lead-Mine, at *Penrose, Cornwall*.

i. 22. Another of a pretty deep yellow, with a small Admixture of white Spar, and a hardish grey earthy Matter. From the Duke of *Somerset's* Works at *Goldsculp, Cumberland*. This holds  $\frac{1}{2}$  Copper: and was out of the same Vein with l. 62. *infra*.

i. 22 \*. Another, grey, with an Appearance very like Bismuth, and probably holding the Mineral. This is what they call *white Mundick*, in *Cornwall*. There is white Spar amongst it. It holds some Copper: and lay in the same Vein with the foregoing. *Vide i. 25. infra*.

i. 23. A grey Marcasite, it consists chiefly of Sulphur, but holds a third Part of Arsenick, and perhaps a very little Copper and Bismuth. From the Duke of *Somerset's* Works, call'd *St. Thomas's Works*, near *Goldsculp, Cumberland*.

i. 24. Another, very like the foregoing. It consists mainly of Sulphur and Arsenick, and seems to hold a little Bismuth. The Miners call this *Grey-Ore*. From the Duke of *Somerset's* Works, at ----- *Cumberland*.

i. 25. Another grey Marcasite, like the two foregoing, only part of it is shot into Grain. From *Killefrew-Wood*, in *Cornwall*. It seems also to hold Bismuth. This sort is called there *White Mundick*.

i. 26. A Marcasite, in Texture resembling the Grain of Wood, and so formed, as if two Pieces of Wood lay one a-cross the other. The Marcasite Grains are of a bright Yellow; but some of the Body is of a Black, the rest of a Brick Colour. Found in sinking a Well, near the Stables on *Gogmagog-Hills*, near *Cambridge*.

i. 27. A Marcasite, pretty like that i. 22. *supra*, only it has a somewhat more blue Cast. Found in sinking a Well at *Great Bowden*, in *Leicestershire*; where 'tis found pretty plentifully, in most of the Wells they dig thereabouts.

i. 28. A yellow Marcasite, with a blackish Admixture. From the Copper-Mines of ----- *Cumberland*.

i. 29. A Piece of Coal, with fine white Spar, and a yellow shining Brassy Marcasite intermingled with it. Taken out of a Dyke in *Sir William Blacket's* Coalery, *Newcastle*.

i. 30. A Marcasite, flat, and equally thick in all parts, as if it had fill'd a Fissure. 'Tis about an Inch in thickness. The two opposite Surfaces are very black; within 'tis grey, with many Sparks of a yellow. From ----- on *Mendip*, in *Somersetshire*.

i. 32. A Piece of Marcasite, of a deep yellow shining Gold Colour, except some small Parts, which are of a shining Red or Purple, and a little Mixture of white Spar. It seems to hold a very small Proportion of Copper. From Mr. *Courtney's* new Copper-Mine, in the Parish of *Malland*, near *South Molton, Devonshire*. This is one sort of their *Mundick*.



i. 33. Another, little different, only not of a yellow quite so deep, with the Spar in greater Proportion, and part of it crystalliz'd. From *Nancy-keag Downs* in *Cornwall*. Mr. Basset.

i. 34. A Marcasite of the same Colour with the precedent, but somewhat more bright and shining. On the Surface of it adheres a small Quantity of a green æruginous Matter. From *Corbeck, Cumberland*.

i. 35. A large Marcasite, consisting of Brassy and Sparry Grains, near equally mix'd in all parts. Sent by the Name of *Treleath-Ore*. From *Cornwall*. Mr. Basset.

i. 36. A Marcasite of a very fine Brassy Hue. It appears to be made up of thin Plates laid one upon another. The Matter of it is very pure and free from any Mixture. The Surface is polite. 'Tis angular, as if crystalliz'd. From *Benwell-Coalery, Newcastle*.

i. 37. Another, with Spots very shining and bright, some blueish, others of a Copper Colour. Amongst the rest is a white Spar: and a black glossy Matter like Talc. This sort of Matter is common in *Cornwall*: and call'd there *Mock-Lead*. 'Twill not run in the Fire with any Alkaline Flux: nor will it calcine. *Poldice-Work, Guinnop, Cornwall*.

i. 38. A Marcasite, with white Spar on the Parts that grew to the Sides of the perpendicular Fissure from which 'twas separated. The Outside is thick set with botryoid Efflorescencies, or small Knobs, yellow, blueish, and purple; all of a shining metallic Hue: and composed of little Flakes or Plates; the whole being a very observable and beautiful Body. This was part of the *Deads*, as the Timmers call the Part of the Vein that they judge not worth working. From the Tin-Mine of *Wheal-and-Coats-Luggon, Cornwall*.

i. 39. Another, from a like Fissure: and of a Constitution little different. From *Poldice-Work*, in *Guinnop, Cornwall*. Dr. Coamar.

i. 40. A Vein-Stone, of a dark grey Colour; the Mass thick set throughout with extremely small cubic brassy Marcasites, out of a perpendicular Fissure of a Rock by *Buttermere*, a Lake where Charrs are taken plentifully, in *Cumberland*.

i. 41. A Mundick Grain, fine, shining like Brass, half an Inch in Thickness, and terminating in an Edge like a Wedge; much like the Spar from the Lead-Mines of *Arkendale*. f. 181. & seq. This was sent by the Name of *Gold-Ore*, from the Gold-Mine of *Mr. Forteskue, at Copple-Tar, Devonshire*.

i. 42. A large cubic Marcasite, with a blueish Stoney Matter adhering to one Part of it. From *Vellan-Grease-Work, Cornwall*. The Miners call it *Copper-Grains*.

i. 43. Mundick Grains of several Sizes, and shot into several Figures; lodg'd part of them in a blueish grey, and part in a brown Stone. From the same Work.

i. 44. A Marcasite, very fine, yellow and brassy in one Part; composed of Plates, breaking with a Grain exactly like the *Roch-Alum*

Alum from *Italy*, in the Catalogue of the *Exotic Fossils*, p. 333.  
From the Copper-Mine at *Hinxton, Cornwall*.

i. 45. Small Mundick Grains, yellow; thick set in a grey Mafs, with a little white Spar. From *St. Columb, Cornwall*.

i. 46. The common yellow *Mundick*. From the same Mine.

i. 47. A Marcasite, of a greenish yellow Cast, with some Grains of a Matter very like Lead-Ore: and two small hexagonal pointed Crystallizations, red, and much like Granats. From ----- in *Cornwall*.

i. 48. A Marcasite, of a fine Brass-like shining Appearance, crystalliz'd; with an Admixture of white Spar, and Mock-Lead. This the Miners call *Brasile Ore*. From *Worksworth* in the *Peak*. Upon its lying by some time, a very yellow sulphurous Dust proceeds forth of it in several Parts.

i. 49. A Tin-Marcasite of a dusky Colour, near black, with a Cast of green and yellow. *Carenbry, Cornwall*. Mr. Bassett.

i. 50. Another, Part of a brassy shining yellow, Part blueish and purple, with white Spar. *Trevasfas, Cornwall*. Mr. Bassett.

i. 51. Another, little different, only the blue and purple Colours are here more bright and fine. It holds a little Copper, and Tin. *Poldice, Cornwall*. Mr. Bassett.

i. 52. Another Tin-Marcasite, with yellow Mundick, but the greater Part of it of a dusky blue Colour. *Relistian, Cornwall*. Mr. Bassett.

i. 53. A Lead-Marcasite, being a mineral Mafs, flaky, glossy, and breaking in Angles; much like the Potters Lead-Ore, only 'tis of a Colour more dusky, and tending to black. The Miners call this *Mock-Ore*, *Mock-Lead*, *Wild-Lead*, and *Blinde*: *Agricola, Galena inanis*: the German Mineralists, *Blende*. There are in it Veins of a yellow shining Marcasite; with a little white Spar: and on one side a greenish Æruginous Matter. Upon tryal of a Piece of this Body in the Fire, it yielded a very little Copper, less Lead, and no Tin. The *Blende* is very obstinate. Several Attempts have been made with the Alkaline Fluxes to run this, but in vain. *Godolphin-Ball, Cornwall*.

i. 54. Another like Mafs, sent by the Name of *Tin-Glass*. Found in a Drift-Work 50 Foot deep, near *Castock, Cornwall*.

i. 55. Another, sent also by the Name of *Tin-Glass*. Found about 20 Fathoms deep at *St. Stephen's*, in *Branwell, Cornwall*.

i. 56. Another Mafs of Mock-Lead, very ponderous, black, bright, and shining, with white Spar, but no yellow Marcasite. From a Tin-Mine in *Wythyell, Cornwall*. There are vast Quantities of this Mineral in several Parts of that County. Many Tryals have been made of it; but it can neither be brought to calcine, nor run in the Fire.

i. 57. A Mafs composed alternately of Veins of white crystalliz'd Spar, and a black glossy shining Matter, seeming to be Mock-Lead. The Texture of the Veins of this last is very remarkable; it being composed of two Orders of Fibres, meeting

in an acute Angle in the middle of the Vein, and composing a Body not unlike a Feather. Found in a perpendicular Fissure near *Caudbeck* in *Cumberland*. I have seen, in the *Mendip-Mines*, *Manganese*, nearly resembling the black Part of this *Mafs*, incorporated with the sparry *Lead-Ore*, as like the white Part of this *Mafs*.

## C L A S S X.

### *Metallic Minerals.*

*Mineral Bodies that approach somewhat the Nature of Metals; and, like them, run in the Fire to a Regulus; but not malleable: wherein it differs from the Regulus of Metals.*

#### P A R T I. ANTIMONY.

##### II. CALAMIN.

##### III. BLACK-LEAD.

#### C L A S S X. P A R T I. Antimony.

*This is one of the most powerful Simples of our Dispensatories.*

k. 1. Ore of Antimony, from - - - - in *Flintshire*. 'Tis found near the Day.

k. 2. Another Sample, from - - - - in *Cornwall*. 'Tis not so rich as the former. Mr. *Kemp*.

k. 3. A pretty large *Mafs* of Antimony, cruſted over with a brown flakey fulphurous Matter, with ſome Grains of Spar in it. *Barbary-Work, Cornwall*.

k. 4. Antimony. part of it in Striæ, and Part in Sparks, coated all over with a fulphurous Cruſt of a pale brown Colour. Found plentifully 24 Foot deep in a Mine at *Howton*, in *St. Stephen's, Cornwall*.

k. 5. Part of another, finer, from the ſame Mine.

k. 6. Antimony-Ore. From *St. Auſil's Mine, Cornwall*. Mr. *Scobell*.

#### C L A S S X. P A R T II. Calamin.

*This is in frequent uſe amongſt the Surgeons, in Plaifters, Ointments, and Collyria.*

k. 11. *Lapis Calaminaris*, externally of a Ruſt Colour: within of a dusky green, got near *Blagen* upon *Mendip*. 'Tis found in the perpendicular Intervals. They meet with it at the Depth of

of about 3 Fathom. This was out of a perpendicular Interval. There is a little Spar in it : and some few small Sparks of Lead-Ore.

k. 12. Another Sample, of a paler Colour. From the same Mine.

k. 13. Another Sample of *Lapis Calaminaris*, with some Spots of a deep red, and others of a Straw Colour. The latter only is Calamin. *Mendip, Somersetshire.*

k. 14. Another Sample, little different from that k. 12. Only on one Part are three Plates, each about  $\frac{1}{10}$  of an Inch in Thickness, of a somewhat deeper and browner Colour, and of a harder and closer Consistence. They are placed one over another; with a small Interval, of about  $\frac{1}{10}$  or  $\frac{1}{12}$  of an Inch betwixt each, which consists of a very pale yellow Matter, and is much more florid and porous than that of the Plates. This last is the Calamin. *Mendip.*

k. 15. A piece of *Lapis Calaminaris*, of a light brown Colour, friable, and thick set with small Pores. There is in it a pretty large Vein of white Spar, having several Grains of Lead-Ore, of the Potters-kind, in it. *Mendip.* This holds a very small Proportion of Calamin. What there is, of this Mineral, in the Mass, is of a Straw-Colour, and porous.

k. 16. A Lump of Lead-Ore ; coated over with a very thin Coat of Calamin, Part of it of a reddish, and Part of a dusky Green. From ----- on *Mendip, Somersetshire.*

#### CLASS X. PART III.

*Nigrica Fabrilis Merreti.* Black-Lead, or Wadd.

See the Account of this Mineral, and the several Uses of it, in the Observations relating to the *Nat. History of Minerals*, p. 2.

This Mineral is sometimes found in the Veins of Copper. *Vide l. 59. infra.*

† k. 1. A Mass of Black-Lead, of the very finest sort; from the Mines in *Barrowdale*, 6 Miles from *Keswick*, in *Cumberland*.

† k. 2. Another Mass, coarser, run in some Parts of it into angular Figures. From the same Vein: as are likewise all that follow.

† k. 3. Another, with Stoney Matter, Part of it grey, Part greenish, and Part of a Rust-Colour, incorporated with it. There are also in it two Lumps, or Knots, of Black-Lead, both very fine. *Ibid.*

† k. 4. Another Mass, very fine; with a reddish Stoney Matter adhering to it. *Ibid.*

† k. 5. Another, with white Spar incorporated with it. *Ibid.*

† k. 6. Another, with a Vein of Spar in it, Part of it white, and Part red. *Ibid.*

† k. 7.

‡k. 7. A Knot of Black-Lead, that, happening to be form'd within the Verge of another, has a Sinus; in which, Part of that existed, on one side. *Ibid.*

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## CLASS XI. METALS.

The Introduction to the following Classes.

### *Of Metals in general.*

C. 1. The great Abundance of Metals, and of Minerals, in *England*.

These one main Fund of our Trade, and Riches, our Strength and Power, by Sea and Land.

Late Discoveries of metallick and mineral Bodies.

And Improvements of the Art of ordering, separating, and refining of them.

Considerable Defects yet remaining in the present Methods of smelting and managing of Ores.

As likewise in the Natural History and Knowledge of them.

Fossils, of little Value or Consideration, work'd in several Parts of the Kingdom.

Whilst others of great Importance are neglected: and their Worth not known.

Methods of remedying this.

The Design of the present Papers: and of the Discourse concerning Mining, and that concerning Assaying.

The Use and Advantage of metallick and mineral Studies to the Publick.

C. 2. Of the Steadiness and Constancy of Nature in all its Productions: and in the Formation of all Bodies.

This happens, 1°. from the Constancy of the Proceedure of the Agents that are instrumental to the Formation of those Bodies: And, 2°. from the Unalterableness of the Corpuscles, which serve for the constituting and composing of those Bodies.

All Gold, when equally pure, and freed from extraneous Matter, is absolutely alike in Colour, Consistence, specific Gravity, and all other respects; the Corpuscles which constitute that Body being perfectly uniform and homogeneous.

The same holds in Silver, Iron, and all other Metals: as likewise in all the simple Minerals, particularly Talc, and Crystal; which are found incorporated with all the several kinds of Metals, much more frequently than any other Bodies besides in all the whole mineral Kingdom.



## Sect. 1. Of the Fibrous Talc. Class IV. Part III.

This Body generally holds to its fibrous Texture with what other Matter soever it happens to be incorporated, unless that Matter be superior to it in Proportion very greatly indeed.

Of the *Hamatites*, and *Schistos*. The Talc in these Bodies keeps to its fibrous Texture, tho' they hold 10 or 12 Parts in 20 of Iron. Compare the *English* fibrous Talc, *† d. 1.* with the *Hamatites*, o. 74.

So also in the green, crusty, fibrous, talky Copper-Ore. This yields 5 Parts in 8, of Copper. *l. 45, 46.*

Likewise the fibrous Talky Lead-Ores, *n. 56. & n. 75. & seq.* yield  $\frac{2}{3}$  of Lead.

Metal discover'd in these Bodies by its Gravity.

The particular Species of Metal, by its Colour, Hue, and Complexion.

The fibrous talky Iron-Ores all red.

The fibrous talky Copper-Ores all green,

The fibrous talky Lead-Ore white, *n. 75.* or yellow, *n. 54. 56, 57.*

Of the fibrous Constitution of some of the *Pyritæ* and *Marcasites*.

Of the fibrous Constitution of Antimony.

Of the fibrous Constitution of some *Cinnabar*.

Of the fibrous Constitution of the *Asbestos*.

Of the fibrous talky Spars.

Of the fibrous, talky, sparry Plates of some of the corneous Flints, *c. 263. & seq.*

Of the fibrous, talky, sparry Plates of the *Ludus Helmontij*.

Of the fibrous, talky, sparry Pipes of the *Lapis Syringoides*.

Of the fibrous, talky, sparry Crusts of some of the *Stalactites*.

Of the fibrous, talky, sparry Constitution of the *Stelechites*, and some others of the Fossil Corals.

Of the fibrous, talky, sparry Cones of the *Belemnites*.

Of the fibrous, talky, sparry Plates form'd out of the Water of the Springs in and about *London*, upon the Evaporation of the Water: particularly in the common Tea-Boilers.

## APPENDIX.

Of the fibrous, talky, sparry Crusts of several Concretions in animal Bodies: particularly of the *Bezoar*.

Of the fibrous, talky, sparry Crusts of the Stone of the *Vesica Fellea*.

As also of the Stone of the Kidneys.

And of the Stone in the *Vesica Urinaria*.

Of the fibrous Constitution of some of the factitious Vermillions.

Sect. 2. Of *Cinnabar* of Antimony. o. 42.

Of Crystals and Spars. These are found incorporated with Metals of all sorts, much the most commonly of any Fossils whatever.

The

*The four grand Tests, or Criteria of Metals, incorporated with, or contained in Spar or Crystal: 1. The specific Gravity of the Body. 2. Its Texture. 3. Its Figure. 4. Its Colour.*

§. 1. The specific Gravity of Spars of various sorts.

The specific Gravity of Crystal.

All Sparry and Crystalline Bodies, that surpass that Standard in specific Gravity, hold Metal.

§. 2. As to the Texture or Grain, and interior Constitution of Crystal, 'tis irregular: and breaks uncertainly. But when incorporated with the fibrous Talcs, it shews, if broke, a striated or fibrous Texture, like that of those Talcs; of which, more above.

When it breaks into angulated Pieces or Figures, *e. gr.* Cubic, or rather inclining to Rhomboid; 'tis dispos'd to that Texture by Lead that is incorporated with it. And such Crystal, or Spar, is frequently found in the Veins along with the Lead-Ore: particularly in the Lead-Mines near *Worksworth*. Vide *f. 25*. This is in specific Gravity to Water, as  $2\frac{1}{2}\frac{3}{5}$  to 1; whereas pure Crystal is but as  $2\frac{1}{2}$  at the most. This shews that there is an Admixture of extraneous Matter in it: and several Experiments I have made upon it, prove that Matter to be Lead. *e. gr.* Dissolv'd in Acids, it gives a Sweetness to the Menstruum exactly like that imparted by *Saccharum Saturni*, dissolv'd in like manner. And, by Tryals in the Fire, I have obtain'd some small Quantity of Lead out of it.

A Spar very common in Lead-Mines, that is shattery, and breaks in Squares, exactly like the finest Potters-Lead-Ore.

§. 3. As to the exterior Form of Crystal, when pure, 'tis found shot only into a pyramidal Figure: or into a Pyramid erected upon a Column; each with six Sides, and Angles.

Whenever it recedes from that Figure, the Variation is caus'd by the Admixture of some extraneous Matter, either mineral, or metallick.

Metallick Matter, when pure and simple, never shoots into an angulated Figure: nor is indeed capable of doing that.

The Bodies that, incorporated with Metals, dispose them to shoot into angulated Figures, are either, 1. *Sulphur*; or, 2. *Crystal*. And all Fossils that are angulated, or shot, have more or less of one or other of those Minerals in them, *n. 132*.

1. There is ever Sulphur in the tessellated Pyritæ, and the angulated Marcasites; neither of which indeed ever hold any considerable Quantity of Metal.

2. But Spar and Crystal are infinitely more obvious and common: and found more or less incorporated with the Metals of most Mines in the World.

Where the Crystalline Matter prevails, and is superior in Quantity to the Metallick, the Body is more or less pellucid; answerable to the greater or lesser Proportion of the Crystal.

But,

But, when the metallick Matter is superior, the Body is in course opake. Instances, in the Tin Grains - - - the tessellated Lead - - - and the Iron Rhombs.

Where there is metallick Matter, incorporated with the Crystalline, it frequently causes this to recede from its natural hexagonal Figure, and to assume one different, answerable to the Figure and Disposition of the Parts of the particular Metal incorporating with the Crystal in its Concretion.

Iron, incorporated with Crystal, determines the Body to shoot into a Rhomboid Figure, *o. 19.*

Tin, incorporated with Crystal, disposes it to shoot into a quadrilateral Pyramid, sometimes placed on a quadrilateral Base, or Column, *m. 1. m. 6.*

Lead determines it to a Cubick or a Parallelipiped Figure.

The specifick Gravity of the pure, pyramidal, or sprig Crystal,  $2\frac{4}{10} \cdot 2\frac{1}{2}$ .

The specifick Gravity of the Cubick Crystal, *f. 88.* is  $3\frac{1}{10}$ .

Tryals of the Cubick Crystals by acid Menstrua: and by Fire, evincing that they hold Lead.

The diced Crystals, *f. 87. \*88. 89. & \*141.* have all a Cast, more or less, of yellow, the Colour imparted to Crystal by Lead, when incorporated with it. *Confer. §. 4. infra.*

The Cubick Crystals are found in the Veins along with the Lead-Ore, in the Lead-Mines of *Westmorland, Arkendale* in *Yorkshire*, &c.

Sometimes where the Lead is not sufficient in Quantity to obscure the Body, and render it opake, yet it is capable of determining it to a Cubick Figure.

The same Crystal, holding Metals of different kinds, may be dispos'd by the one to a particular Figure, and by the other to a particular Colour. Instances of Lead and Iron, in the tessellated purple Crystals, *f. 91. & seq.*

Different Metals, or Metals and Minerals, incorporated with Crystal in the same Body, give it a Figure somewhat compounded and irregular. Of this there is an Instance in *f. 93 +.* in which all the Crystals that hold Lead are yellowish, and of a cubic or parallelipiped Figure; whereas those that are green, and hold Lead and Copper, recede from that, and are of an irregular Figure.

#### §. 4. Of the various Colours observable in Crystals.

These arise from an Admixture of some extraneous Mineral, or metallick Matter, but much more commonly the latter, incorporating with the Body in its Formation.

All the Gems owe their Colours to an Admixture of such extraneous Matter, chiefly metallick, with the crystalline.

They are found either in form of Nodules, reposit in the Bodies of the Strata; or else crystallized in the Fissures or perpendicular Intervals of those Strata.

The Nodules are either, 1. Solid, and of Figures wholly irregular and uncertain like Pebles. 2. Solid, and round, with their external Surfaces beset all over with crystallized Gems. 3. Concave, having their inner Surfaces beset with like crystallized Gems. 4. In Rhomboid Figures. 5. In form of Columns, with several Sides, generally six, terminating at each end in a Point.

The Gems in form of Nodules were form'd during the time of the Deluge, along with all other metallick, and mineral Nodules.

Those in the perpendicular Fissures are form'd and grow there like the Crystals and Spars; and were form'd by the same means.

The Nodules were sustain'd amidst metallick and mineral Matter during their Formation; and the Gems in the Fissures have frequently Minerals and Ores of Metals accompanying them.

The black Stones and Gems owe their Colour to Tin, *m. 1.*

The red Stones and Gems owe their Colour to Iron; and are found chiefly in Iron Mines, or along with the Ores of that Metal.

Stalactitæ of a red Spar in the Veins of Iron-Ore, *f. 66. 67.*

Red Crystal and Spar in Iron-Ore, *o. 28. 55. 59. 60. 61. 98.*

The *Bristol* Stones have frequently a Tincture of red.

I observ'd in *St. Vincent's-Rock*, by that City, some Stones that nearly approach'd the Granate Complexion; and several very nearly resembling the Amethyst. That, and indeed most of the Rocks thereabouts, are of a red Hue; and impregnated with Iron. And indeed most of the *Bristol* Stones, particularly the red, I found actually growing along with Iron-Ore in the Veins and Fissures of those Rocks.

Of the Granate, *i. 47 †. o. 2.*

Of the Ruby.

Of the Amethyst, *f. 80.*

The green and blue Stones owe those Colours to an Admixture of Copper. That Metal, dissolv'd, and incorporated with an Acid, assumes a green Colour; with an Alkali, a blue, *l. 53.*

Spar, white, tinged with green, yielding  $\frac{1}{18}$  Copper, *f. 15.*

Crystal, Part pellucid; and Part tinged throughout with green, along with Copper-Ore, *l. 53.*

Crystal and Spar of a green Colour from Veins of Copper-Ore, *f. 15. 15\*. 16. 93 †.*

Of the Emerald, *l. 53.*

Copper-Ore, of a green Colour, very frequent.

Of *Ærugo*, or Verdigrise.

Of the green Rust of Brass, and of Copper.

Copper-Ore of a blue Colour.

Of the Saphir, *l. 53. 54.*

Blue Spar, *f. 16\*. 16 †.*

The yellow Gems owe that Colour to an Admixture of Lead.

Of Litharge.

Of *Saccharum Saturni*.

Of *Vitrum Saturni*, *p. 503. o. 12.*



A Calx of Lead, *Minium*, or Litharge, run down and flux'd with a triple proportion of crystalline Pebles, or Sand, constitutes a Glass transparent and yellow.

The Specific Gravity of *Vitrum Saturni*.

The Specific Gravity of the Topaz.

Of the Topaz, its Colour and Constitution, f. 128. 177. 177 \*.

o. 12.

A yellow cubic Crystal from a Vein of Lead-Ore, f. 141 \*.

Of a sort of Lead-Ore, of a greenish yellow Colour, from *Mendip* - - - - -.

#### A P P E N D I X.

Of the different Hardness of the various kinds of Gems. This chiefly happens from the different Hardness of the crystalline Matter, which is the Basis or main Ingredient of them.

That Matter seems to be of three sorts. 1. The *Common Crystal*, which appears to be the Basis of the Occidental Topaz, Amethyst, and Saphir; of the Opal, the Chrysolite, the Aque Marine, the Chalcedony, the Jacinth, the Vermilion; of the Nephritic Stone, the Jasper, and the Heliotropium; of the Cornelian, the Beryl, the Agat, the Cat's Eye, the Onyx, the Sardonyx, and the Moco Stone.

2. Another Species of Crystalline Matter, many degrees harder than the common Crystal, and usually call'd the *White Saphir*. This is the Basis of the Granate, the Oriental Topaz, the Amethyst, the Ruby, and Saphir.

3. The *Adamantine Crystal*, or constituent Matter of the Diamond. Even this likewise admits of a metallic Admixture; and is sometimes observ'd with a yellow Tincture, as also, tho' much more rarely, with a green, red, or blue.

The Hardness of several of the Bodies of the first Class is much augmented by the Incorporation of the additional Matter. Thus the Jasper, Heliotropium, and Agat, are four times as hard as Crystal, which is the Basis of those Stones.

But the Hardness of some of the Bodies of the second Class is diminish'd by the additional Matter; and the Oriental Granate, Topaz, and Amethyst, are not so hard as the white Saphir.

Of the specific Gravity of Crystal, the white Saphir, and Diamond; as also of the various kinds of colour'd Gems.

The Refraction of Crystal, the white Saphir, the Diamond; and the several kinds of transparent colour'd Stones.

Of the various sorts of colour'd Glasses, Pastes, Enamels, and factitious Gems.

A Recapitulation, with the several Canons or Rules of the Art of judging of the Constitution, and the mineral or metallick Contents, of any Body; founded upon the specific Gravity, the Texture, Figure, and Colour of it.

Metal, of the same sort, has ever the same Properties, and is alike in all respects, in what part of the World soever it is got, or  
in



in whatever Matter it is found, when it is disengaged from that Matter, and brought to be equally pure, and free from extraneous Mixture.

## CLASS XI. PART I.

*The Ores of Copper.*

## P R E F A C E.

*Copper is found incorporated with very various Matter; in particular with the Sand (l. 1. & seq.) of the Stoney Strata; with the Matter of the Lapidaceous Nodules; with Sulphur, or other Minerals; with Spar; and with Earth. Where the Copper is predominant, and in such Quantity as to be worth working, I have ranged the Body amongst the Copper Ores; but, where the other Matter is superior, I have ranged it under the proper Head of that Matter. Of this there are Instances in the Marcasites and the Pyrita; (i. 15. 16. 17. 23. 32. 51. 53.) in the Spars and Crystals that are tinged with blue and with green (f. 16. 93.) in the poorer Lapis Armenus (a. 52.) and Terre Verte (a. 53.) and finally, in the Tin and Lead Ores (n. 104.)*

## The EXTRACT.

Steel-grain'd Copper-Ore. l. 42.

Copper-Ore of a dusky brown Colour, near black, l. 63.

———— glossy, purple, l. 64.

———— red, with a Cast of Purple, l. 38.

———— friable, æruginous, green, l. 16†.

———— friable, with a green villose Coat, l. 47.

———— with a hard, green, æruginous Crust, striated a-crofs, or having transverse Fibres, in manner of the *Lapis Hamatites*, l. 45.

———— with fibrous talky Concretions, green, l. 19. 38.

———— vein'd with blue and green, l. 55. 59.

———— green, blue, and black, l. 16\*. 18. 22. 37.

———— blue, or *Lapis Armenus*, l. 26. 27. 28. 29.

———— with Spar, white, green, and blue, l. 9. 10. 11. 12. 13\*. 14. 17. 24. 35.

———— green, with green Crystals, l. 16. 53.

———— blue, with blue Crystals, l. 25. 54.

Copper dissolv'd with a volatile Alkali, takes a blue; with an Acid, a green, l. 53.

———— blue, with white fibrose Lead-Ore, l. 28.

Copper-Ore with Potters Lead-Ore, l. 5. 8. 35.

———— with Tin-Ore, l. 22.

———— with Iron-Ore, l. 18. 19. 38.

———— with Marcasite, l. 16\*. 18. 22. 37.

Mundick, holding Copper, with white Spar, l. 61.

Copper-

Copper-Ore, with Wadd or black Lead, *l.* 59.

—— in the Mafs of Sand-Stone, *l.* 1. 2. 3. 4.

—— Virgin or Native Copper, *l.* 30. 31. 32. 33. 48. 50. 51.

—— with Bits of white Spar in it, *l.* 49.

Green Ore yielding  $\frac{1}{2}$  Copper, *l.* 25.

—— yielding  $\frac{2}{3}$  Copper, *l.* 46.

—— blue, yielding  $\frac{1}{2}$  Copper, *l.* 26. to 29.

Æruginous, friable, green Ore,  $\frac{1}{2}$  Copper, *l.* 16 †.

### Copper-Ores.

*l.* 1. A gritty Sand-Stone with a white Pebble in it, 'tis tinged with a green Colour. White Pebbles are frequently found in it, and some near pellucid. There is a little Vitriol in it: and 'tis supposed, some Copper, but so little I could never extract any. From Mr. *Boothe's* Works at - - - - - in *Cheftire*.

*l.* 2. Another Sample, with Spots of a fine blue; from the same Mines.

*l.* 3. Another, from the same Mines. It has an admixture of a brass-like Marcasite, and white Spar, with some small Quantity of Copper.

*l.* 4. Another, without Spar or Marcasite, holding somewhat more Copper, with a little Lead or Antimony, as I judge by View. From the same Mines.

*l.* 5. A gritty Copper-Ore, with Spots of brown and green. It has a few Grains of Lead-Ore in it. From *Cumberland*. Mr. *Nicolson*.

*l.* 6. A yellowish brown Spar. By its weight I conjecture 'tis impregnated with some Metal, probably Copper. From the Copper Mines of - - - - - in *Cumberland*. Mr. *Nicolson*.

*l.* 7. A Spar of a brick Colour, from the same Mines; perhaps it holds a little Copper. Mr. *Nicolson*.

*l.* 8. Spar, white and green: it contains Copper. And there are several Grains of something which appears like Lead. From a Lead-Mine at *Nenthead* in *Cumberland*. Mr. *Nicolson*. vid. *l.* 35. *infra*.

*l.* 9. Spar, white and green, with a very bright blue. It holds a little Copper. From the same Mine. Vid. *l.* 36. *infra*.

*l.* 10. A brown Spar, with Spots of blue and green. It holds a little Copper. From the Mines of - - - - - in *Cumberland*. Mr. *Nicolson*.

*l.* 11. Spar, pellucid and green, crystallized: with an admixture of a little Marcasite, and a little Copper. From *Caldbeck* Copper-Mines, *Cumberland*. Mr. *Nicolson*.

*l.* 12. Spar, white, pellucid, and green, with an admixture of Marcasite, Lead and Copper. From - - - - *Cumberland*. Mr. *Nicolson*.

*l.* 13. Spar, brown, with a little green: and a great Proportion of a Brass-like shining Marcasite, also a little Copper. From the Mines of - - - - in *Cumberland*. Mr. *Nicolson*.

*l.* 13\*. Another Sample, one half consisting of Spar, white, with a Cast of brown: the other of a yellow shining Marcasite. In

this latter appear several Spots of a green Colour: and some few of a fine bright blue. In one Part of the Spar, is a small Cavity set round with Shoots of a diaphanous crystalline Spar: and some of the Crystals have a fine soft glance of yellow with an Eye of red. From the same Mine.

*l. 14.* Spar pellucid, white, and green, with a little Marcasite and Copper, and a very small share of Lead. From - - - - in *Cardiganshire*. It lay within a Fathom of the Grass.

*l. 14\*.* A Mass consisting chiefly of white Spar a little pellucid, with Veins of Antimony, and several green Copper Spots. 'Tis said to yield a little Lead. There is a Vein of Marcasite in it, but so fine 'tis scarcely discernible. Found with the foregoing. The five first of these Bodies are Stoney, and not worth working. The following are Sparry, hold little Copper, and ought rather to have been rank'd amongst the Vein-stones.

*l. 15.* White Spar, with a Brassy-like Marcasite, and a small admixture, as it seems, of pure Virgin-Copper. Mr. *Southwell*.

*l. 16.* A blackish Copper-Ore, very poor, with Spots of green. On one side of it is a crystalliz'd Spar, pellucid, and green. Mr. *Kingston's* Mines in *Northumberland*.

*l. 16\*.* A Copper-Ore, with Spots of green, blue, and blackish: also an admixture of Marcasite. It holds about  $\frac{1}{4}$  of Copper. From the same Mines.

*l. 16†.* A green æruginous Ore, from the perpendicular Fissures of the same Mines. It holds about  $\frac{1}{2}$  Copper.

*l. 17.* Spar, white and green, with an admixture of Marcasite, and some little Copper. *Cumberland*. Mr. *Nicolson*.

*l. 18.* Copper-Ore, of a dusky brown Colour, with Spots of green and blue. There is Marcasite amongst it, and a very little Iron. *Cumberland*. Mr. *Nicolson*. Vid. *l. 37. infra*.

*l. 19.* Copper-Ore of much the same Colour with the former. It contains a very little Copper, with Marcasite, and a small admixture of Iron. There are in some Parts of it capillary or fibrous Shootings of the Copper, of a green Colour, very pretty. Near *Ashburn* in the *Peak*.

*l. 20.* Another Sample, not much different from the former, it probably may hold about  $\frac{1}{10}$  of Copper. From - - - - in *Cumberland*.

*l. 21.* Another, with Veins of green, a ruddy black, and yellow sulphurous Marcasite. It seems to hold about  $\frac{1}{10}$  of Copper. From - - - - in the *Peak*.

*l. 22.* A Marcasite of a shining, brassy Complexion, with Spots of purple and blue. It seems to hold about  $\frac{1}{10}$  Copper: and, as 'tis said, a little Tin. From - - - - in *Cornwall*.

*l. 23.* Copper-Ore, of a fine purple Colour, with an admixture of a shining brassy Marcasite, and white Spar. It is said to hold  $\frac{1}{4}$  of Copper, but this Sample does not seem really to hold above  $\frac{1}{8}$ . 'Tis found in great Quantity. From the New Mines of *Gomarten*, in *Devonshire*.

l. 24. Copper-Ore of a dusky Colour, with green and blue. There is with it a small admixture of Spar. This holds  $\frac{1}{2}$  of Copper. From Sir Thomas Stanley's Mines at *Alderly-Edge*, in *Cheshire*.

l. 25. A green porous Ore, consisting of Laminæ, with some tuberos Efflorescencies. From the perpendicular Fissures of --- Mine in the *Peak*. It holds  $\frac{1}{2}$  Copper.

l. 26. Copper-Ore of a sky, or pale blue Colour; found in small round Lumps, some a little larger, others less than Pease. They yield near  $\frac{1}{2}$  Copper. *Cheshire*. Mr. *Upton*.

This is the *Lapis Armenus Officinarum*; used by the antient Physicians in their Purges, in Cases of Melancholy and Phrensy.

l. 27. A blue porous Ore, with brown Spar adhering to it. The blue Part will probably yield  $\frac{1}{2}$  Copper. From Mines formerly wrought by some German Undertakers at *Worksworth*, in the *Peak*.

l. 28. Copper-Ore of a fine Azure Colour, that yields about  $\frac{1}{2}$  Copper. From *Malham* in *Yorkshire*. It lies in a loose Soil, amongst white fibrous Lead-Ore, like that n. 56. There is ten times as much of this latter Ore as of the Copper. It lies 8 Fathom deep.

l. 29. Two Samples of Copper Ore of a somewhat deeper blue Colour. From *Malham* in *Yorkshire*. Mr. *Lydall* assures me that he has melted many Tuns of it, and it yields full  $\frac{2}{3}$  Copper run with Sea-Coal. It makes a good Colour; for which use he sold one Tun for 100*l.* and 'twas carry'd to *Rotterdam*. These Mines are not now work'd.

l. 30. Copper-Ore, of an Iron-Colour, with a Lamina of green adhering to it, and virgin or native Copper shooting out of it. From Mr. *Truebody's* Mines in *Cornwall*. "*Purum autem sape invenitur Aurum, Argentum, Æs, Argentum vivum: minus sape Ferrum, & Plumbum cinereum: vix unquam Plumbum candidum & nigrum.*" Agricola de re Metal. L. 5. p. 76.

l. 31. Two Flakes of pure fine native Virgin-Copper. 'Tis in Plates, and malleable. From - - - - in *Cornwall*.

l. 32. A piece of the Stone to which the aforesaid Flakes grow in the Mine. 'Tis of an Iron Colour: and has some small Filaments of native Copper in it.

l. 33. Native or Virgin Copper. Two Plates, one of them consisting of Grains like those of Sand cohering together, and constituting a flat Body, or Plate. The other Plate consists of Parts like small Threads. From the same Mines with the Flakes. n. 31. *supra*.

l. 34. Two small Nodules, given me by the Name of *Copper-Stones*, and said to hold  $\frac{1}{3}$  Copper. From - - - - in *Wales*. Mr. *Baden*.

l. 35. Spar, white, with some parts of a lovely green, and bright blue: In others there's a faint Cast of Purple. It has a little Copper in it, with some small Grains of Lead-Ore. From the same Mine, at *Nenthead*, with l. 8. *supra*.



*l. 36.* Another small Sample from the same Mine. Little Copper or Lead discover themselves in this. The Spar much as in the precedent. The blue is very fine, and the Spar, being partly diaphanous, shews the Colour passes deeper into the Substance or interior Parts of it. This differs little from *l. 9.* and is from the same Mine at *Nenthead, Cumberland.*

*l. 37.* A piece of Copper-Ore, of a dusky reddish black Colour. Among it is a pretty deal of a yellow shining brassy Marcasite: with white and green Spar, whereof part is crystalliz'd. This is of the same sort, and from the same Mine, with *l. 18. supra.*

*l. 38.* Copper-Ore, red, with a Cast of purple. There are some Grains of Spar intermix'd with it: and very fine capillary or fibrous Concretions, of a bright green Colour, like those of *l. 19.* From *Sir Copleston Bampffield's Mine at Northmolton, Devonshire.* The Ore lies in the perpendicular Fissures. 'Tis in considerable plenty. The Ore of this Mine yields  $\frac{1}{2}$  of Copper one with another. 'Tis sold for *6l. 10s. per Tun.* All of it holds a little Iron; which they free it from by melting some sulphurous or mundick Copper Ore along with it.

*l. 39.* Another Sample from the same Mine, of a dusky reddish Colour, with an intermixture of Spar, and a brassy, or as it is call'd, the *Golden Marcasite.* Some Parts of this Body shine very finely, and are of a beautiful Colour, betwixt a Purple and Blue.

*l. 40.* Another Sample of the same, in which the Spar, Marcasite, and the purplish-blue Parts, are more distinct: and so appear with more Beauty than in the precedent.

*l. 41.* Another, as well as the four following, from the same Mine. This, excepting a little grey Spar in it, is throughout of a purple Colour, glossy and shining.

*l. 42.* This is red on the Outer-parts: but within of a deep grey, glossy and shining, and much resembling the Grain of Steel where broken; only the Grain of this is somewhat coarser. From the same Mine; it yields  $\frac{1}{2}$  Copper.

*l. 43.* Two small Masses, each about the bigness of a Hazel-Nut. They are of a dusky green Colour, their Surface is smooth, and they appear very like two Drops of a melted Metal. They yield above half Copper. From the same Mine.

*l. 44.* A Piece of Copper-Ore, part of which is of a green, and part of a deep red Colour, 'Tis softer and more friable than any of the foregoing. It yields about  $\frac{1}{3}$  Copper. From the same Mine, at *Northmolton, Devonshire.*

*l. 45.* A Copper Marcasite, with a shining brassy Cast, in the Middle, but externally brown with a Cast of Copper. This is cover'd with a very fine florid green æruginous Crust, striated across, very much like the Crusts of the *Hæmatites*, and the Septa of the *Lodus Helmontij*, and about  $\frac{1}{12}$  of an Inch in thickness. From the *Isle of Man.* Upon Tryal, in the Fire, I find that the Marcasite yields  $\frac{1}{2}$  of Copper: the æruginous Crust  $\frac{1}{8}$ . Out of a small Drift in a Cliff, in the *Mine-Haugh in Kirk Christ Ryshen,*  
of



of the South side of the Isle. These Cliffs yield Lead-Ore: of which there are many Tuns now raised.

l. 46. Small Pieces of Copper-Ore, green, and very rich: in the middle of each is one, or more Spots, of Copper, very fine, and almost of the natural Colour of that Metal. This Ore, upon Trial, yields  $\frac{2}{3}$  of Copper. *Isle of Man*. Found with the foregoing.

l. 47. Four Masses of Copper-Ore, light, porous, and friable: brown within, and externally environ'd with a very thin Coat of green, villose or nappy, and not unlike Velvet. Perhaps this may be the *Viride Montanum* of Dr. Lister. *Isle of Man*. Found with the foregoing.

l. 48. Native Copper, flexible and malleable, in small Masses, some of which are granulated, others ramose. In some parts it appears of the native Colour of this Metal: in others, 'tis ting'd with green. Also a Piece of Copper-Ore, of a deep brown with a Cast of red, and Sparks of a very bright native Copper. On some Parts of it is a green *Ærugo*: and on others, a crystalliz'd Spar. From the *Isle of Man*, found loose upon the Sea-shores, near the foregoing; being beat out of the Cliffs by the Sea.

l. 49. Native Copper, with bits of white Spar amongst it, from *Poldice Mine*, *Cornwall*. The Vein of this lies higher up in the Hill than that of the Tin.

l. 50. Native, or, as 'tis call'd, *Virgin-Copper*, extremely pure, and malleable; from - - - - in *Cornwall*.

l. 51. Native Copper, fine, flexible, and malleable. *Chefwater*, *Cornwall*.

l. 52. Copper-Ore, Part of it black, with a Cast of red, and Part green. Near *Ashburn* in the *Peak*.

l. 53. Copper-Ore, green; and amongst it Crystal, part of it pellucid, and part tinged throughout with green. *Hartly*, *Westmorland*. The Emerald owes its green Colour to an intermixture of Copper, and so does the Sapphire its blue. This Metal assumes the one or the other of those Colours according as the Nature of the Matter, with which it incorporates, happens to be. Copper dissolved in a volatile Alkali, as Spirit of Urine, or Sal Ammoniac, takes a blue Tincture: in an Acid, *e.gr.* Vinegar, strong Aquafortis, or the like, it becomes green. (Pliny took notice that the Emerald was found in Copper-Mines, in *Metallis ærariis*. *Nat. Hist. l. 37. c. 5. p. 714.*)

l. 54. Spar, part grey, and part brown; with green Copper-Ore. Also a fine blue Copper-Ore: and amongst it Crystals shot into very small Columns of a bright blue Colour. From *Cockly-Beck*, in *High Furness*, *Lancashire*. The Sapphire owes its Colour to an intermixture of Copper.

l. 55. Copper-Ore, brown, vein'd with blue, and green: and having in one part a Vein of Mundick. Found in a perpendicular Fissure, in the *Skrees*, a very high Mountain in *Cumberland*. Upon Trial it yields  $\frac{1}{4}$  Copper. This Vein has not been work'd.

l. 56. Gritty Copper-Ore, green, from *Chefwater Mine, Cornwall*. It lies 25 fathom deep. The Load is one Foot and a half over. 'Tis of difficult Fusion.

l. 57. Gritty Copper-Ore, green, *Caudbeck, Cumberland*. It is not work'd.

l. 58. Copper-Ore, with a little Tin; from Mr. *Basset's Mine at Camborn-Eacon*. It holds about  $\frac{1}{2}$  Copper.

l. 59. A Mass from a considerable Vein in a Mountain two Miles from *Goldscap, in Cumberland*. 'Tis of a dusky Colour, with Spots of green, and blue: as also bright shining Sparks appearing to be either of Lead or Wadd. This is within a Mile of the Wadd-Mine: and I have seen Samples of this Vein that had Specks of Wadd more plain in them.

l. 60. A Marcasite, externally brown: within of a shining brassy Constitution; with Specks of green. *Isle of Man*. Given me by my Lord *Derby*.

l. 61. Mandick, holding Copper; with white Spar, and Specks of a Copper Colour. It fill'd the Vein: and there are Parts of the Sides of the Vein adhering to the two opposite Surfaces of it. *Sir William Penington's, Conyston-Fells, Lancashire*.

l. 62. Mundick, diffused in Strings thorough the common Vein-stone in the Grand Vein of *Goldscap, Cumberland*. A Piece, broke off this, upon Tryal with the black Flux, after a slight Roasting, yielded  $\frac{1}{2}$  of fine Copper at the first running. *Vid. i. 22. supra*.

l. 63. Copper-Ore, of a dark brown Colour near black, with some Specks of green. It holds also a little Tin. *St. Columb, Cornwall*.

l. 64. A glossy Purple Copper-Ore. *Comarten, Devonshire*.

l. 65. Part of a Pyrites, black, with Veins of yellow and purple. It holds Copper. The Mine was lately discovered in the Estate of *Sir Thomas Aston, at Nun-Eaton, in Warwickshire*. I observed several of these Pyritæ; which were all, in Form oblong, compress'd, or flat, growing gradually thinner towards the two opposite Edges; in such sort as pretty nearly to resemble the Ribs of an Animal\*. I can determine nothing concerning their length, having seen none but what were broken; but some of the Pieces were two Foot long. As to their breadth, I observed of all Dimensions from an Inch to above half a Foot. They lay very close, and in great numbers, in a Stratum of greyish Stone: at the Depth of about 20 Foot.

## CLASS XI. PART II.

*The Ores of Tin.*

### P R E F A C E.

*This Metal is no where found so pure as to be malleable. Vid. Agric. p. 421. a. supra.*

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\* In which Form Jet is sometimes found. *vid. g. 30, 31. supra.*

The Tin-stones, or Ores, crude, and as taken out of the Mine, yield the richest, about 1 in 30: the middling Ores, about 1 in 60: and the poorest, about 1 in 120; for even such are work'd to some small Profit. But when the Ores are dress'd, and brought, by stamping, and washing, to what they call Black-Tin, which is the Ore clean'd and prepared for the Fire, they yield  $\frac{1}{2}$  Metal; or, if well dress'd, more, perhaps 5 in 8; which the Tin-Grains yield without any Dressing. For these are large, and may be easily pick'd out from amongst sparry, sandy and stoney Matter. Whereas the small Sparks of Tin-Ore require those Methods to separate and extricate them. All Tin-Ores, that are capable of clean Dressing, yield pretty much alike when dress'd.

I have said something of the Shoals, trailing down from the Loads, or main Veins of Tin, towards the Sea, in APPEND. II. to CLASS I. *supra*.

### THE E X T R A C T.

#### 1. Tin-Mines mention'd in the following Class.

|  |                                |
|--|--------------------------------|
| St. Martins-Mine, near St. Austle, m. 1. | Carnt Barn. m. 15.             |
| St. Agnes, m. 2.                         | Wheal and Coats Luggon. m. 16. |
| Trevannas St. Agnes. m. 3.               | Carrack-Gloose Works. m. 18.   |
| St. Tuiſt. m. 4.                         | Treveddo. m. 19.               |
| Redruth. m. 5. 7.                        | Wythyell. m. 20.               |
| Godolphin-Ball. m. 6. 17.                | St. Columb. m. 21.             |
| Poldice. m. 8. 24.                       | Budnoch. m. 23.                |
| Polgooth. m. 9.                          | Beam-Works. m. 25.             |
| Penrose. m. 11.                          | Luggon. m. 26.                 |
| The Pell, Gunlaus-Works. m. 12.          | Warleggon Downs. m. 27.        |
| 22.                                      | Wheal and Crack Works. m. 28.  |
| Trevala, Redruth. m. 13.                 | Carneban Works, m. 29.         |
| St. Breigh Downs. m. 14.                 | St. Twen. m. 30.               |

#### 2. The Depth of the Tin-Mines.

|                                 |                               |
|---------------------------------|-------------------------------|
| A Mine 200 Foot deep. m. 4. 17. | A Mine 40 Fathoms. m. 12. 26. |
| — 80 Foot deep. m. 5. 29.       | — 20 Fathoms. m. 16. 20.      |
| — 40 Foot. m. 7. 21. 27.        | — 60 Fathoms. m. 18. 23. 30.  |
| — 150 Foot. m. 9.               | — 10 Fathoms. m. 28.          |
| — 20 Foot. m. 15.               | — 27 Fathoms. m. 14.          |
| — 45 Foot. m. 19.               | — 70 Fathoms. m. 8.           |
| — 30 Fathoms deep. m. 1. 22.    |                               |

#### 3. Damps in the Tin-Mines. m. 19.

— Præfages of Rain. m. 19.

#### 4. Of the Water in the Mines.

Water in the Tin Veins, not clear. m. 17.  
 — clear and tasteless in the Tin-Veins. m. 7, 8, 9, 12, 15, 16, 19, 20, 21, 26, 28, 30.

Water clear, but of a harsh Taste. *m.* 23.

———reddish, and tasting like rusty Iron. *m.* 14. 18.

5. *Of the Strata of Earth and Stone through which the Tinnerns mine.*  
*m.* 2. & seq.

Killas call'd Raze by the Tinnerns. *m.* 9.

6. *Of the Tin Loads and Shoads.* APPENDIX 2. to CLASS 1.  
*supra.* and *m.* 19. *infra.*

A Shoad-Stone. *m.* 10.

Tin-stones beaten out of the Cliffs by Storms. *m.* 11.

7. *The Tendency and Direction of the Load.*

A Load running North-West. *m.* 28.

Loads running East and West, *m.* 3. 4. 8. 14. 18. 21. 23. 25. 26.  
27. 29.

The Lead-Veins, in Cornwall, run the same Way. *n.* 102. 104.

The Iron-Load, North-West and South-East. *o.* 97.

8. *The Thickness of the Vein, or Load of Tin-Ore.*

A Load 4 Inches thick. *m.* 4. ——— 2 Foot over. *m.* 18. 26. 29.

——— 1 Foot. *m.* 5. 7. 20. 28. 30. ——— 15 Inches *m.* 19.

——— 3 Foot over. *m.* 9. Polgooth. ——— 10 Inches. *m.* 23.

Spar, the Load 2 Foot over, standing by a Tin-Load of the same Diameter. *m.* 18.

——— the Load 5 Inches thick, standing by a Tin-Load 2 Foot thick. *m.* 26.

9. *Tin no where found native and pure.* CLASS XI. PART 2. Preface.

10. *The different Proportions of Metal in the various sorts of Tin-Ores.*  
*Ibid.*

Tin Grains yield at least  $\frac{1}{2}$  Metal. *m.* 1, 2, 3, 6.

——— of a Quadrangular Pyramidal Figure. *m.* 1, 6.

——— call'd by the Miners, Corns of Tin. *m.* 3.

11. *The various other Bodies with which Tin is found incorporated,*  
Tin-Ore with black Spar. *m.* 19.

——— with white Spar. *m.* 2, 6. 13. 26.

——— with crystalliz'd Spar. *m.* 25.

——— attended with Spar and Cornish Diamonds. *m.* 18.

——— with Marcasite or Mundick.

——— with Copper. *m.* 14.

——— with Lead. *m.* 24.

### *Tin-Ores.*

*m.* 1. Tin-Grains. A Sample fairer than ordinary. These yield above half Tin. This Sample was found thirty Fathom deep in *St. Martin's Mine* near *St. Austle*. *Mr. Scobell*. The Grains, or crystalliz'd Shoots are Quadrangular, and of a Pyramidal Form.

*m.* 2.

*m. 2.* Tin-Ore, grained, or shot, of a dusky black Colour, with a little white Spar in it. On the two opposite sides is an earthy Sand, of a Buff-Colour. It seems to hold at least one half Tin. *St. Agnes, Cornwall.*

*m. 3.* Tin-Ore. Mr. *T. Lower* collected this, and several others, for me. His Account of it is as follows. " 'Tis from *Trevanas, St. Agnes*. The Mine is in a Valley, the Ground on every side round, being higher. 'Tis twenty Fathom deep, downright, to the Load; which runs East and West. They sink thorough only two Strata to come at the Load. The first is of a black Earth, two Foot thick. The second is of white Kellas, down to the Load. There is much Water in the Shaft, draining thorough the Walls of the Mine. In the midst of the Load, in some Places, are hollow Cavities, wherein Tin-Grains are found, or, as the Miners call them, *Corns of Tin*."

*m. 4.* Tin-Ore from *St. Tuiſt*. *T. Lower's* Account. "The Mine is upon an Hill. 'Tis two hundred Foot deep. There are three Strata. The first is of black Earth, two Foot deep. The second is of a blackish Earth, and Sand, mixed together, 6 Foot deep. The third is a sort of Growan down to the Load; which runneth East and West. 'Tis nine Inches over, and very well tinn'd. But in some Places the Load is not above four Inches thick."

*m. 5.* Tin-Ore, from *Redruth*. *T. Lower's* Account. "The Mine is in the side of an Hill, declining to the East. 'Tis eighty Foot deep, down strait to the Load. There are two Strata of Earth, and then one of Free-stone down to the Load. The first Stratum is black Earth two Foot deep; the second is of a yellow Earth four Foot deep, distinguished from the former by an horizontal Fissure; wherein is a loose sort of red sandy Matter, with some Water draining through it. Next is the Bed of Free-stone, lying flat and level; and the Load is one Foot over, running East and West. There is a small Matter of Water soaking out of the Rock or Stone aforeſaid."

*m. 6.* Tin-Ore, shot, in several Parts, into Grains; of which, all that are distinct, appear to be Pyramidal and Quadrangular. There is a light brown Sand, and some white Spar, mixed with it. *Godolphin-Ball, Cornwall*. Vid. *m. 17. infra*.

*m. 7.* Tin-Ore, holding about one half Tin. From *Wheal-and-Crack, Redruth*. *T. Lower's* Account. "This Mine is in a Valley, between two Hills. 'Tis forty Foot deep, downright. There are two Strata, the first is of black Earth, two Foot deep. The second is a sort of Yelvean Stone, and Earth, mixed together, down to the Load; with perpendicular Fissures from the first Stratum down to the Load. This is one Foot over: and runs East and West. There is a Spring of Water that cometh forth by the Load, as big as a Man's Wrist, very clear and tasteless. In this Place, in the old Works, fifteen Years since, was found an Oak-Tree, eighty Foot deep, with Branches and Roots, all, besides what was perished."



*m. 8. Tin-Ore, Poldice. T. Lower's Account.* " This holds about  $\frac{1}{4}$  Tin. The Mine is 70 Fathoms deep downright. The first Stratum is of a yellowish Earth, four or five Inches. The second Stratum is of white Rubble, and Clay, down to an hundred Foot deep. Then there is a dun Stone which the Miners call *Elvean Stone*, two Foot thick. Then the same sort of Rubble and Clay as before, down to the Load; which runs East and West, but dippeth away after an End Westward. There issues forth a Spring of Water as big as a Man's Leg, by the Load, very clear and tasteless. The Work is begun in a Valley, but is wrought home to the Shaft aforesaid by an Adit: and the Water drawn off by Engines."

*m. 9. Tin-Ore, Polguth. T. Lower's Account.* " This holds near half Tin. The Works are on the side of an Hill. The Surface is of a Raze, and a little red Earth. The second Stratum is of a white Clay, intermixed with this sort of Raze, as the Miners call *Kellows*, downright, an hundred and fifty Foot deep to the Load; which is three Foot over, very hard, and rich. There is a sort of Water rises out by the Load: and runneth East and West."

*m. 10. A Shoad-stone, found near the Surface of the Earth.*  
- - - *Cornwall.*

*m. 11. A Tin-stone.* This, and others of the same sort are commonly flung upon the Coasts, near *Penrose, Cornwall*, by Storms. The Tin-stones, which he thinks flung up by the Sea, are most probably beaten out of the Cliffs by Storms and Violence of the Sea.

*m. 12. Tin-Ore from the Pell, Gunlaus Works. T. Lower's Account.* " This Mine is forty Fathoms downright. Here is a small Spring of Water, but very clear and tasteless, issuing out, by the Load, on the South-West side of it, as big as a Man's Thumb."

*m. 13. Tin-Ore, grey, sparkling, and porous, with a white Spar, in Quantity near equal to the Ore, intermix'd with it. From a Work called Trevela, in Redruth.*

*m. 14. Tin-Ore from St. Breigh Downs. It seems to hold some Copper, and about  $\frac{1}{2}$  Tin. T. Lower's Account.* " This Mine is on Downs that are near level; having no descent in half a Mile or more. The Mine is twenty seven Fathoms deep, downright. There are two Stratums. The first is of a reddish brown Earth, two Foot thick. The second Stratum is red Kellas, down to the Load; which runneth East and West. There is a Spring of Water, which issueth out of one side of the Load, as big as a Man's Wrist. 'Tis of a reddish Colour; and the Miners say it tasteth like old rusty Iron. I could not taste it, it being disturbed by the Miners. By the side of this Load there is a Load of Mundick, four Inches over in some Places, in others, more."

*m. 15. Tin-Ore from Carnt-Barn. It holds near  $\frac{1}{4}$  Tin. T. Lower's Account.* " This Mine is in a Valley, and is twenty Foot deep, downright. They sink through two Stratums, the first is

" of

“ of black Earth, two Foot deep: the second of Sand and Pebbles intermixed, down to the Load; which runneth East and West; having a Spring of Water, issuing out by the Load, as big as a Man's Wrist, very clear, and tasteless.”

*m. 16. Tin-Ore from Wheal and Coats-Luggon.* It holds about  $\frac{1}{4}$  Tin. *T. Lower's Account.* “ This Mine is on Downs that are level, and no way declining. 'Tis twenty Fathoms deep, going down from Shamble to Shamble. There are over it two Stratum. The first is two Foot and a half deep, of red Earth and small Stones mixed together; then a white Kellas, down to the Load; which is half a Foot over, running East and West, having a small matter of Water draining out by the Sides, (or as the Tanners call it, the *Walls*) of the *Country*,” [Vein, or Load.]

*m. 17. Tin-Ore. Godolphin-Ball.* It holds about  $\frac{1}{4}$  Tin. *T. Lower's Account.* “ The Work is between two Hills: and descendeth into two Valleys; one on the East-side, the other on the West. The Mine is two hundred Foot deep, perpendicular. There are two Stratum above it. The first is, of two Foot deep, black Earth: the second is of white Kellas, down to the Load. There is some Water in the Mine, but not very clear. The Load runs East and West.” Vid. *m. 6. supra.*

*m. 18. Tin-Ore, from Carrack-Gloose Works.* It holds about  $\frac{1}{8}$  Tin. *T. Lower's Account.* “ This Mine is on an Hill, and is 60 Fathoms deep: there are three Stratum over it. The first is black Earth, one Foot deep, (or thick.) The second Stratum is of white Kellas, four Foot thick. Then an horizontal Fissure, and under it, a brown Stone 7 Inches thick. Then a Stratum of red Kellas down to the Load. On the South side of the Load is a Load of Spar, full of *Cornish* Diamonds. The Load of Tin is two Foot over, and runneth away East and West. The Load of Spar, is two Foot over, running parallel with the former. 'Tis hollow in some Places, where the Diamonds are. There is a Spring of Water, issuing forth by the Load of Spar, and Tin Load. The Spring is as big as a Man's Wrist; and in Winter bigger than a Man's Leg, but of a red Colour: and of taste like old rusty Iron. The Hill is as high as *Bow-Steeple* perpendicular. On one side, 'tis bounded with the Sea; the other running into a deep Valley.”

*m. 19. Tin-Ore, from Treveddo. T. Lower.* “ It lies 40 or 50 Foot deep from the Surface of the Earth. The Work is on an Hill, very steep, 200 Paces, perpendicular, to the bottom, where runs a pretty large River. I went under Ground 150 Paces, or farther; it having been very much wrought in old time. The Surface is nothing but a sort of Rubble and Moss. The second Stratum is of a blackish sandy Earth. Then a perpendicular Fissure of a kind of a black Spar, some Places Tin in it, and some Places none. It leads from the second Stratum down farther than I could go; even under any Working. The third and last Stratum, is white Sand and Clay intermixed one with the other.

And

“ And Fiffures or Veins are croffed one over the other in the Bottom,  
 “ and run every way. Some are one Inch and a half over, others two  
 “ or three, to 12 or 15 Inches over. The first the Miners call Strings,  
 “ the latter they call the Load, which is commonly beft tinned. There  
 “ is Water in this Work, altho’ on fuch an Hill, which iffueth out  
 “ of the Load, and round about it. This Water runs and finds a  
 “ Way through the Earth. If there be, in any Mine, a Paffage or Ca-  
 “ vity in the Earth to receive the Water, then there is a good  
 “ Air, and good working for the Men. If not, there happens  
 “ many times unwholefome Air, and *Damps*; which not only im-  
 “ pair their Health, but take away even their Life, as I have been  
 “ informed by feveral Tinner, who have been in Mines where  
 “ fuch Damps have happened; and fome of the Men have died  
 “ immediately in the Mines. Nay, fome who have thus informed  
 “ me, have themfelves lain for dead for a confiderable Time. In  
 “ fome Works, Damps happen where there is no Water. Great  
 “ Damps come forth of the Earth, they lay between the quick  
 “ and dead Earth. Thefe Damps have a very naufeous fmell,  
 “ and in a Moment take away a Man’s Breath, if he venture to  
 “ go up or down through the Shaft. They happen moft fre-  
 “ quently in Fenny-Ground: and are great *Preſages of Rain*. I was  
 “ told by a Miner, who feemed to be a fenfible Perſon, that he  
 “ ſaw a Man wound up out of a Tin-Shaft, dead to all appea-  
 “ rance, but they rolled him (as their manner is) and his Body  
 “ jerked and twitched on the Earth, like one poifoned, and fo  
 “ died.”

*m. 20. Tin-Ore, from Wythyell. T. Lower’s Account.* “ This  
 “ Mine is on a plain Downs. ’Tis 20 Fathoms deep, downright.  
 “ There are two Stratums. The first of black Earth, two Foot  
 “ thick. The ſecond Stratum conſiſts of red Kellas, down to  
 “ the Load. The Load is a Foot over: and runneth Eaſt and Weſt.  
 “ There is, in this Mine, a ſmall matter of Water, which the  
 “ Miners call *the Soaking of the Country*.”

*m. 21. Tin-Ore, from St. Columb. It holds near half Tin.*  
*T. Lower’s Account.* “ This Mine is on a plain Downs, with  
 “ no Deſcent for a great way. ’Tis 40 Foot deep. There are  
 “ two Stratums. The first is of black Fen Earth, a Foot and  
 “ an half deep. The ſecond is white Clay, and white Spar, mix-  
 “ ed together down to the Load; which runneth Eaſt and Weſt,  
 “ dipping away toward the Eaſt: and there is a ſmall Spring of  
 “ Water iffuing out by the Load.”

*m. 22. Tin-Ore, from Gunlaſ-Works. It holds about  $\frac{2}{3}$  Tin.*  
*T. Lower.* “ This Work is on the ſame Hill with *Carrack-Gloofe*.  
 “ There are, over the Load, but two Stratums; the first is of  
 “ black Earth, one Foot thick. The ſecond is only of white  
 “ Kellas and white Clay, down to the Load. The Shaft is 30  
 “ Fathoms deep, downright. The Load runs Eaſt and Weſt; and  
 “ is one Foot over, without any Water.”

*m. 23. Tin-Ore, from Budnock.* It holds about  $\frac{3}{4}$  Tin. *T. Lower's Account.* " This Mine is on a Hill as high as *Bow-Steeple*. The Mine is sixty Fathoms deep, downright. There are three Stratum; the first of black Earth, four or five Inches deep. The second is of brown Earth, three Foot deep. Then small Pebbles three or four Inches deep, mixed with a blackish Earth. Then a red Earth, and small Kellas, down to the Load. This runneth East and West, being ten Inches over. Here is a small Spring of Water which ariseth not by the Load, but out of the middle of the Draught, out of a perpendicular Fissure; wherein is a sort of Spar, which runs down from an Horizontal Fissure. The perpendicular Fissure is at the Top not above two Inches over; but groweth bigger all the way downwards. So that at the bottom, it is seven or eight Inches over; and the Water that issueth out of this Fissure, tasteth hard, but is very clear."

*m. 24. Tin-Ore. Poldice.* This, besides Tin, seems to have Lead in it.

*m. 25. A thin Vein of Tin-Ore, with crySTALLIZED Spar; found fifty Foot deep, in Beam-Works, The Load runs East and West. T. Lower.*

*m. 26. Tin-Ore, with Spar, from Luggon. T. Lower's Account.* " This Mine is on the Top of a great Hill, declining on all Parts, except on the West-side, where it runneth away, for a Mile, on a Level. But on the East, North, and South, it runs down into Valleys, but in some Places in a Perpendicular, as high as *Bow-Steeple*; where there run forth Brooks of Water. The Mine goes down strait, about forty Fathoms; where the Load lies East and West; and is two Foot over. There issueth out, by the Load, a Spring of Water as big as a Man's Wrist. It cometh from the West; and on the South-side of the Tin-Load is a Load of Spar, about five Inches thick, in some Places pretty clear. There are three Stratum: The first is black Earth two Foot thick. The second is of red loose Earth, three or four Foot thick. Then there is an Horizontal Fissure of Spar, four or five Inches over. Lastly, all white Kellas, and white Clay, down to the Load. "

*m. 27. Ore, holding about  $\frac{1}{8}$  Tin, from Warleggon-Downs, about forty Foot deep.* The Surface is of black Fen-Earth, 12 or 13 Inches thick. The second Stratum is of Sand, mixed with Earth. The third Stratum is of great Rocks of Moor-stone, and Sandy-Earth, repositied together, down to the Load, which runs East and West. It lieth on a Hill.

*m. 28. Ore, holding about  $\frac{1}{8}$  Tin, from Wheel and Crack-Works.* This Mine is on the side of a Hill, 100 Paces to the Bottom. The Shaft or Mine goes downright; and the first Stratum is about two Foot deep, being a black Fen-Earth. The second Stratum is of Kellas, down to the Load, being ten Fathoms deep; and runneth away North-West. The Load is one Foot over;



over; and a Spring of Water issues out by the Load: But the Water is carry'd away by an Adit, which is brought from the Bottom.

*m.* 29. Ore, holding about  $\frac{3}{5}$  Tin, from *Carneban-Works*. There are two Stratums. The first is black Earth, sixteen Inches deep. The second is of white Kellas, down to the Load. The Mine is eighty Foot deep; the Load two Foot over, and runs East and West.

*m.* 30. Ore holding about  $\frac{1}{4}$  Tin, from *St. Twen*. This Mine is sixty Fathoms deep downright. There is, over the Load, two Stratums. The first is of black Pen-Earth, two Foot deep. The second is a blackish Elvean Stone, down to the Load. There is Water draining in, within seven Foot from the Surface of the Earth. The Load dippeth away toward the East, and is a Foot over, being very rich in some Places.

## CLASS XI. PART III.

### *The Ores of Lead.*

### P R E F A C E.

*Lead-Ore has obtained various Names: 1. From its Colour; Blue Ore, Grey Ore, White Ore. 2. From its Constitution and Texture; Capillary, Fibrose or Stringy Ore, Striated or Antimoniated Ore, Steel-grain'd Ore, Sparkling or Star-grain'd Ore, Broad-grain'd or Smooth-grain'd Ore, Cross-grain'd Ore, Diced, Cubic, or Tessellated Ore. 3. From its Form; Flat, Plated, or Rib Ore, that ever stands Edgeways or Parallel to the Sides of the Vein, Loose Lumps or Boose Work; of which, those that are so large as to require to be broke for the Furnace, are called Knockings; those that are cover'd with any extraneous Matter, are called Coated Ore; those that are clear and free, Naked Ore. 4. From the Place in which 'tis found; Vein Ore, Belly Ore, Float Ore. 5. From its Use; Potters Ore. Several other Names have been given at random, by the Miners of several Countries; of which some are hereafter exhibited. Indeed, when this Catalogue comes to be review'd, the Names appropriated to several Lead Ores, especially those Sorts that are brighter, and nearest resemble that Metal, ought to be corrected. Thus, there are several Samples that are called by the Miners, Potters-Ore, and enter'd under that Name. Whereas, in truth, that Name ought not to be restrain'd to one Sort of Ore, since the Potters use all sorts indifferently, that are clean, or have the Appearance of Lead, and melt freely. Such indeed, may have the generical Name of Potters-Ores, or, as they are styled in some Countries, Blue Ores. And these may be subdivided into the three following subordinate Species. 1. The Sparkling or Star-grain'd Ore; such as that *n.* 34. 2. Broad-grain'd or Smooth-grain'd Ore; such as that, *n.* 42. *n.* 112. And 3. The Cross-grain'd Ore; such as that, *n.* 104. and *n.* 107.*



*n. 107. n. 75. and the Ores that follow, are better distinguish'd than some of the Precedent.*

*The great or smelting Works commonly come up to the Assays of Lead within 1 in 20.*

### *Lead-Ores.*

## EXTRACT.

### *I. The Names and different Sorts of Lead-Ores.*

Talky or Stoney Lead-Ore. *n. 17.*

Potters-Ore. *n. 64, 73.*

— or, as the Miners call it, *Blue-Ore. n. 82.*

Potters, or Broad-grain'd, or Smooth-Ore. *n. 42, 90, 111, 112, 118.*

Broad-ey'd Lead-Ore. *n. 110.*

Cross-grain'd Lead-Ore. *n. 103, 104, 105, 107.*

Star-grain'd Ore.

Honey-comb Lead-Ore, *Mendip. n. 37.*

*Shelley-Ore. n. 106.*

Small-grain'd Lead-Ore. *n. 113.*

Striated or Antimoniated Lead-Ore. *n. 113.*

Steel-grain'd Ore. *n. 21, 69.*

— or Galena, as this Kind is called by *Pliny*, and the Miners who follow him. *n. 21.*

White Semipellucid Lead-Ore. *n. 58.*

White Foliaceous Lead-Ore. *n. 74.*

Whitish Squamous Lead-Ore, call'd by the Miners *White-Ore. n. 82, 83, 84.*

White Fibrous Lead-Ore, call'd by the Miners, *Stringy-Ore. n. 54. & seqq. 71, 72, 75, to 81.*

— resembling *Saccharum Saturni. n. 81.*

— lies above the Potters-Ore, at *Nenthead* in *Cumberland. n. 54.*

— rare at *Barrow-Work, Cumberland*, but found along with the Potters-Ore, at all depths, where there is room for it to shoot. *n. 75.*

Lead-Ore, diced or cubic. *n. 7, 120. & seqq.*

— found in Vacuities, of the perpendicular Fissures. *n. 120, 132.*

— the Cubic Figure is owing to Crystal incorporating with the Lead. *n. 132.*

Lead-Grains so pure as nearly to approach the Fineness of Virgin Lead. *n. 62, 63.*

— call'd by the Miners *Diced-Ore. n. 63.*

Lead-Ore so pure and rich as almost to come up to the Purity of Native-Lead, being free from Spar and other extraneous Mixture. The Miners call this *Naked-Ore. n. 127.*

11. *The Manner in which Lead-Ores lie in the Earth.*

Lead-Ore found in the Veins, or perpendicular Fissures of the Strata. *n.* 27. & *seqq.* *n.* 112, 116, 118.

— brought thither out of the Bodies of the Strata, by Water.

— sometimes borne thence, and hurry'd into Springs and Rivulets by the Water, which proceeding out of those Veins, forms and supplies those Springs and Rivulets. *n.* 131.

A Lead-Vein eight Inches over. *n.* 104.

— one Foot over. *n.* 102.

The Lead-Veins in *Cornwall* run East and West. *n.* 102, 104. as the Tin-Veins there do. *Vide Extract of CLASS X. PART 2.*

§. 7.

Lead-Ore, with part of the Stone of the side of the Fissure to which it grows, *n.* 95, 96, 97.

— with part of a thin Rider of Stone in it. *n.* 96, 119.

— concentered, in Grains, on a dusky grey Stone, part of a Rider. *n.* 119.

Potter's Ore, part of a Rib. *n.* 12, 81, \* 97, 98, 106, 112, 115, 124, 125, 126.

— Part of a Rib that fill'd a String. *n.* 106.

Boose-Work or Naked-Ore found in Lumps. *n.* 60, 61.

Lead-Ore lying in a Float. *n.* 65.

III. *The Fusion or Melting of Lead-Ore.*

The Smelters come up to the Assayers, within 1 in 20. *Pref. to CLASS XI. PART 3.*

Of the smelting Works in *Arkendale.* *n.* 108.

*Mendip* Green-Ore runs with the greatest difficulty in the Fire; the white fibrous Lead-Ores with the greatest freedom of any in *England.* *n.* 49, 54.

IV. *The different Proportions of Lead in the several Ores.*

Potter's-Ore, *Arkendale*, holding  $\frac{3}{4}$  Lead. *n.* 111, 112, 114.

— *Flintshire*, holding  $\frac{2}{3}$  Lead. *n.* 45.

— *Worksworth*,  $\frac{5}{8}$  Lead. *n.* 40, 41, 42.

— *Austin Moore*,  $\frac{5}{8}$  Lead. *n.* 64.

— *Sodbury*, yielding  $\frac{5}{8}$  Lead. *n.* 27.

Common Lead-Ore, *Mendip*,  $\frac{1}{2}$  Lead. *n.* 29, 30, 33, & *seqq.*

Cross-grain'd Ore, holding  $\frac{3}{4}$  Lead. *n.* 107.

Steel-grain'd Ore, holding near  $\frac{1}{2}$  Lead. *n.* 20, 26.

— holding near  $\frac{2}{3}$  Lead. *n.* 21.

— holding  $\frac{1}{3}$  Lead. *n.* 22.

*Richmond*, Diced-Ore,  $\frac{2}{3}$  Lead. *n.* 63.

Fibrose Lead-Ore, yielding  $\frac{2}{3}$  Lead. *n.* 54, 56.

Squamose or White-Ore, yielding  $\frac{1}{3}$  Lead. *n.* 82, 83, 84.

*Mendip* Green-Ore,  $\frac{1}{2}$  Lead. *n.* 49.

*Caldbeck*, Green-Ore, yielding  $\frac{1}{4}$  Lead. *n.* 52.

Gritty Lead-Ore, yielding  $\frac{1}{3}$  Lead. *n.* 87.

V. *The Proportion of Silver in the Lead of different Mines.*

*Devonshire*, Steel-grain'd Ore, a Tun yielding 30 Ounces of Silver. *n.* 20.

The Company's *Welch* Mines, Steel-grain'd Ore, a Tun, yielding 30 Ounces of Silver. *n.* 21.

*Potters-Ore*, near *Holy-Well*, *Flintshire*, 18 Ounces per Tun. *n.* 45.

*Dovegang*, *Potters-Ore*, yielding upon trial, but 4 Ounces of Silver per Tun. *n.* 26.

Lead, of the *Talky-Ore*, *Wales*, a Pound yielding 14 Grains of Silver. *n.* 17.

VI. *Combinations of the different Sorts of Lead-Ore each with another: and of Spar, Marcasite, Calamine, and other Minerals, and Metals, with Lead-Ore.*

Fibrose Lead-Ore concreted on *Potters Lead-Ore*, *n.* 81\*, 85, 86.

*Potters Lead-Ore* in Lumps, cover'd over with a Crust of white Spar and Fibrose Lead-Ore, call'd by the Miners *Coated-Ore*. *n.* 81†.

Lead-Ore with white Spar. *n.* 19, 22, 25, 26, 46, 47, 66, 67, 73, 90, 103, 104, 105, 107, 123.

— with a pellucid Spar crystalliz'd. *n.* 7, 68, 93.

— with a pellucid cubic Spar. *n.* 8, 59.

— with a grey Spar. *n.* 1.

— with a yellow Spar, that Colour proceeding from Lead incorporated with it. *n.* 5.

— with purple or iron Spar, and with green or copper Spar. *n.* 2, 5, 6, 8.

— with Spar, white, purple, and yellow. *n.* 92.

— with Spar and Talc. *n.* 17.

— with *Cauk*. *n.* 89, 95, 96, 112, 116.

Lumps of Lead-Ore in a Rib of *Cauk*. *n.* 129, 130.

*Cauk* incorporated with Lead-Ore, forced off the Vein by Water, worn, rounded, and brought forth into a Rivulet. *n.* 131.

Lead-Ore abounding in Arsenic. *n.* 82, 83, 84.

— with Marcasite. *n.* 123.

— with a glossy sulphurous Marcasite shot into small Cubes. *n.* 16.

— with yellow Mundick. *n.* 103, 104, 108.

— with Calamine. *n.* 28, 49, 50.

Steel-grain'd Ore, with Antimony. *n.* 18, 19, \*19, 22, 38, 113.

Lead-Ore with Copper-Ore. *n.* 48, 74, 104.

VII. *The various Depth at which Lead-Ore is found in the Mines.*

A Lead-Mine, *Mendip*, 15 Fathoms deep. *n.* 28.

— 20 Fathoms deep. *n.* 30.

*Row-Pits* are the deepest on *Mendip*. The Lead-Ore is there found from 8 to 30 Fathom deep. *n.* 37.

A Lead-Mine, *Charan-Math-Coh*, *Cornwall*, 10 Fathoms deep. *n.* 104.

— *Perran-Sands*, 80 Foot deep. *n.* 102.

— *Dovegang*, the deepest of any in the Peak, being upwards of 60 Fathoms. *n.* 26.

A Lead-Mine *Richmond-Moor, Yorkshire*, 11 Yards. *n. 63.*

— in *Richmondshire*, 71 Yards deep. *n. 67.*

Potters-Ore, *Flintshire*, found from 15 to 30 Fathom deep. *n. 45.*

#### *Lead-Ores.*

*n. 1.* A piece of a coarse, greyish, ponderous Spar, with a thin Plate of Lead-Ore, adhering to part of it. From *Cumberland*. Mr. *Nicolson*, since Lord Bishop of *Carlisle*.

*n. 2.* White Spar, with a faint Cast of purple and green. There's Lead-Ore incorporated with it, *Cumberland*. Mr. *Nicolson*. Those two Colours in the Spar are Signs of some small admixture of Iron and Copper with it.

*n. 3.* Another Sample, in which the Purple is stronger. From the same Mine.

*n. 4.* Lead-Ore, of the Potters fort, lying very fair, and distinct, in Spar white, with a slight reddish Cast. *Cumberland*. Mr. *Nicolson*.

*n. 5.* Lead-Ore in a white or semi-pellucid Spar, with a Vein of a yellowish Cast, and another of purple. Those two Colours are owing to an admixture, the yellow of Lead, the purple of Iron, incorporated with the Spar. *Cumberland*. Mr. *Nicolson*.

*n. 6.* Lead-Ore in a semi-pellucid white Spar, with a very fine green Spar, that Colour being owing to an admixture of Copper, incorporated with it. *Worksworth* in the *Peak*.

*n. 7.* Lead-Ore, part of a large Cube, having upon it a white pellucid Spar crystalliz'd. *Cumberland*. Mr. *Nicolson*.

*n. 8.* Lead-Ore, with a pellucid Spar curiously shot into small Cubes. From - - - in the *Peak*.

*n. 9.* Lead-Ore in a coarse white Spar, the Grains or Masses of both large. From *Worksworth* in the *Peak*.

*n. 10.* Lead-Ore in a like Spar, but the Grains of both less. From *Muggleworth-Park*, in the Bishoprick of *Durham*. A Tun of this Lead yields 60 Ounces of Silver. *Vid. n. 25. infra.* I have seen Lead-Ore, incorporated with Spar, exactly after the manner of this, from *Skildon*, near *Blanchland*, in the Bishoprick of *Durham*.

*n. 16.* Lead-Ore, of the Potters fort, very fine, incorporated with a yellow glossy sulphurous Marcasite, part of which is shot into small Cubes. From *St. P's Work, Cornwall*. Mr. *Crow*.

*n. 17.* Lead-Ore, with Talc, and a little Spar, equally mix'd with it. It holds about  $\frac{1}{10}$  of Lead. From - - - - in *Wales*. Mr. *Kemp*. A Pound Weight of the Lead reduced out of this Ore, yields about 12 or 14 Grains of Silver. This the Miners call a *Talky* or *Stoney-Ore*.

*n. 18.* A Mass consisting of white Spar, a greenish yellow Marcasite, Antimony, and Lead, of that sort the Miners call *Steel-Ore*, all pretty equally intermix'd. From - - - - in *Devonshire*. Sir *Hen. Northcote*.

*n. 19.* Lead-Ore, holding a little Antimony, and of Lead about  $\frac{1}{8}$ , being very poor. *Tepar's Work, Cornwall*.

n. 19\*. A Sample of like sort, with an Admixture of white Spar. It holds Lead, Antimony; and, as 'tis said, Silver. From *Birch-Bank* in *Blackburn, Cumberland*.

n. 20. Ore, very sparkling, of the Steel-Grain. It holds near half Lead, some Antimony, Marcasite, Tale: and, as 'tis said, a little Tin. The Lead yields, of Silver, 30 Ounces *per Tun*. From *Ziras-Newton*, near *Exeter*, in *Devonshire*.

n. 21. Ore of the finest Steel-Grain. It has in one place a fine soft Cast of Purple, Blue, and Brass. 'Tis the richest I ever saw of this Mine, and holds  $\frac{2}{3}$  Lead. It has a little Silver in it; the Lead yielding 13 Ounces *per Tun*. Sir *Carbery Price's* Mines at - - - - - in *Cardiganshire*. This answers the Description that the Mineral Writers give of that sort of Lead-Ore, yielding also Silver, that they call *Galena*.

n. 22. Ore of the same sort, tho' the Grains be not quite so fine. There's with it a little white Spar, and Antimony. It holds  $\frac{1}{3}$  of Lead: and about 3 Penny W<sup>t</sup>. of Silver in a Pound. [In the Spar of this Mine, sometimes Virgin Silver appears in small Plates and Threads.] From *Comarten*, *Devonshire*.

n. 23. Ore of the same sort, only the Grains yet larger, with some of the Potters-Ore adhering to it. From *Oden-Mine*, under the Mount call'd *Mamm-Tor*, in the *Peak*.

n. 24. More of the same sort, but the Grains still larger, with an Admixture of a coarse white Spar. It may hold about  $\frac{1}{2}$  Lead. There's a little Marcasite Matter in it. From - - - - - in *Cheeshire*.

n. 25. Another Sample, with the Grains larger than the foregoing, and not unlike that which the Miners call the *Star-Grain-Ore*. It may hold about  $\frac{1}{2}$  Lead. There's a white semipellucid Spar mix'd with it. From *Mugglesworth-Park*, in the *Bishoprick of Durham*. Vide n. 10. *supra*.

n. 26. Lead-Ore, with an Admixture of white Spar. It yields above one half Lead. *Worksworth*, in the *Peak*. *Dovegang* is the deepest Mine in the *Peak*, and upwards of 60 Fathoms. Of all the *Peak-Lead* that I have known tryal made, none yields, of Silver, above 4 Ounces *per Tun*. There's little Steel-grain'd Lead-Ore found in the *Peak*.

n. 27. Lead-Ore, in a thin flat Form, being taken forth of a small perpendicular Fissure (which it fill'd) of a grey Stone. In a Mine near *Sodbury*, *Gloucestershire*. It yields  $\frac{2}{3}$  Lead.

n. 28. Lead-Ore, of the same Form, likewise from a small Fissure which it quite fill'd. 'Twas at about the depth of 15 Fathom. 'Tis as rich as the precedent. From Major *Twisford's* Work, at *Chuton*, *Mendip*. *Somersetshire*. On each flat of this, is a brown Mineral Concretion, appearing to be Calamine.

n. 29. More of the same; from other like Fissures, to one side of which this Ore adhered. The same Mine. This yields  $\frac{1}{2}$  Lead.

n. 30. Another flat piece, but thicker, from one side of a Fissure of the same Mine, 20 Fathom deep. It is found in great quantity, and holds above  $\frac{1}{2}$  Lead, but little Silver; on one side.



are Vestigia of the Rock to which it adhered, on the other various Protuberances. The Ore here, usually adheres to both sides of the Fissure: and, in the middle, is frequently a Drift of Clay, from 2 or 3 Inches to a Foot, nay sometimes 2 Foot thick. The different manner of the several successive Applications or Plates of the Lead successively incrusting on the Rock, is very observable in this Sample.

n. 31. 32. Two Pieces somewhat thicker, they were found 4 Foot deeper, adhering to one side of the same Fissure.

n. 33. This Sample has more Protuberances, and some of the Clay interspersed with it, from the side of another Fissure of the same Mine. This yields near  $\frac{1}{2}$  Lead.

n. 34. Part of a still thicker Piece of sparkling or star-grain'd Lead-Ore, with an admixture of Clay or Earth, found deep in the same Mine. *Qu.* Whether the brown and grey Matter adhering to this, be not Calamine? This yields near  $\frac{1}{2}$  Lead.

n. 35. Another, the Surface of the Tubercles crusted over with a thin coarse Spar. At near the same depth, in those Mines. Near  $\frac{3}{4}$  Lead.

n. 36. Lead-Ore, florid, with many Protuberances, and an admixture of white Spar. Out of a Fissure of a Lead-Mine - - - - Mendip, near  $\frac{1}{2}$  Lead.

n. 37. Lead-Ore, thick set with Tubercles, and several Pores or Intervals. The Miners call it *Honey-Comb-Ore*. There's a great deal of earthy Matter, of a rust Colour, in its Intervals, and on the Surface of the Tubercles. This sort of Ore is found in the perpendicular Fissures of the Stone, in vast quantity, from 8 to 30 Fathom deep. From *Row-pits*, in *Chuton Liberty, Mendip*. *Row-Pits* are the deepest on *Mendip*.

n. 38. A Mass of Lead-Ore that seems to have lain in the hollow of some Stone. Its Surface being unequal, and having Fragments of Stone adhering in almost all Parts of it. It may hold about  $\frac{6}{10}$  Lead; and a little Antimony. From - - - - in the *Peak*.

39. Another, of the Potters-kind. There's a whitish sparry Matter adhering to a large Part of the Surface of it. From - - - - in the *Peak*.

n. 40. Potter's-Ore, from *Worksworth* in the *Peak*. It holds near  $\frac{5}{8}$  Lead; but little Silver.

n. 41. Potters-Ore, as rich as the former. From *Hartly-Castle, Westmorland*.

n. 42. Broad-grain'd, or smooth-grain'd Potters-Ore, from *Winster* in the *Peak*. As rich as either of the foregoing.

n. 43. Potters-Ore. From - - - - in *Northumberland*.

n. 44. Potters-Ore, having a talky Spar (of a greyish Colour with a green Cast) adhering to it. From - - - - in the Bishoprick of *Durham*. *Sir William Blacket*.

n. 45. Potters-Ore, from the Lord Bishop of *St. Asaph's* Mines in *Flintshire*. 'Tis found in vast quantity, from 15 to 30 Fathom deep in the perpendicular Fissures of the Strata of Stone. It holds full

full  $\frac{2}{3}$  Lead; but scarce any Silver. Indeed there is but one Mine in this County, that affords Silver worth working: and that lies near *Holy-Well*, yielding 18 Ounces per Tun.

n. 46. Potters-Ore, with a Vein of white Spar passing through the middle of it. From a Lead-Mine at *Penrose*, near *Kelstone*, in *Cornwall*.

n. 47. Lead-Ore, with a little white Spar adhering to it. From *Sir Thomas Standish's* Mines at *Dukesborow* in *Lancashire*.

n. 48. A Piece of Lead-Ore, flat, having fill'd a String, or small Vein; with a little Spar adhering, and Copper-Ore on one side green, and yellowish on the other. From - - - in *Cheshire*.

n. 49. Lead-Ore of a Popenjay green Colour. 'Tis cavernous and porous, and has a little Calamine of a reddish brown Colour, in its Caverns. It yields  $\frac{1}{2}$  Lead; but hardly any Silver. This sort is found in considerable quantity from two to fourteen Fathom deep, both in the Strata, and in the perpendicular Fissures. Mr. *Baden*, from *Blagen-Hill*, *Mendip*. The Calamine Mines are very near. They smelt this green Ore, in a reverberatory Furnace, with the Coal of *Mendip*; running old Iron with it to imbibe the Sulphur. This is of the hardest Fusion, and the fibrous Ores, n. 54, 55, 56. the softest Lead-Ores we have in *England*.

n. 50. Another Sample, not so Cavernous, with Calamine mix'd with it. In this small Grains of Lead discover themselves to the Eye. From the same Mine. This is of a pale green, and more inclining to a yellow.

n. 51. Another of a Sea-green Colour, its Surface studded with several Tubercles. From the same Mine.

n. 52. Another of the same sort, of a yellow Colour, with a mixture of green. There's a little white Spar amongst it. It yields  $\frac{3}{4}$  Lead. From *Caldbeck*, *Cumberland*.

n. 53. Potters Lead-Ore. There adheres to it a friable Body of a rust Colour, with several small sparkling Grains in it. From the Lead-Mines at *Brickhillburn*, near *Nent-head*, *Cumberland*. Mr. *Nicolson*.

n. 54. Lead-Ore of a brownish Colour, consisting chiefly of short fibrous or capillary Bodies, variously disposed throughout the Mass, the whole nearly resembling a coarse *Saccharum Saturni*. From the same Mine with the former. This lies in great quantity, at the top of the Mine, before they come to the Water. Underneath is Potters-Ore. This is my Lord *Darwentwater's* Mine: and is one of the most considerable in *England*. This and the two following run easily in the Fire. These fibrous Ores yield, at the great Works, rarely above 8 in 20. It holds more Lead indeed; but, being of gentle Fusion, some of the Metal drives up with the Fire. They have no Sulphur, nor Arsenic in them: nor any Silver at all. This yields, on Assay,  $\frac{5}{8}$  Lead.

n. 55. Another Sample, of like fibrous or capillary Texture, and different in nothing from the former, only 'tis of a blackish hue. From the same Mine still.

n. 56. Another, very curious, the capillary Bodies of a pale Straw-colour, disposed into numerous Falciculi, variously disposed and laid upon one another. 'Tis very rich, yielding at least  $\frac{2}{3}$  Lead, tho' nothing like that Metal appears in the whole Mass, it much more resembling a Spar than a Lead-Ore. 'Twas found in *Barrow-work*, a Mine in an high Mountain, near *Keswick*, in *Cumberland*. There are in it Specks of a yellow Matter, which probably are Sulphurous: and there is Mundick in the Veins of both this and the neighbouring Mountains.

n. 57. Lead-Ore, flakey, and striated, the Striæ parallel to each other. 'Tis white, with a slight Eye of yellow. Its whole Appearance is like that of a Spar, and nothing like Lead appears, tho' it be very rich of that Metal. From - - - near *Bristol*. Mr. Cole. "*Vena plumbi apud Ubios candida. fluoribus candidis non pellucidis. similis.*" J. Kenteman. *Nomenclat. Foss. Misnia.* p. 83.

n. 58. Lead-Ore, white and semi-pellucid, appearing much like a clear Flint, both in Texture, Diaphaneity, and all other respects. From *Mendip*, in *Somersetshire*. Mr. Kemp.

n. 58 \*. Another Sample from the same Place. This is intire, in form of a Nodule, transparent. The exterior Surface is a little rough. To the Eye 'tis no ways different from the common pellucid Pebles; but 'tis very ponderous, and rich of Lead. "*Vena plumbi candida fluoribus candidis pellucidis similis: copiose dives ex centenario enim sunt libra plus quam sexaginta plumbi.*" J. Kenteman. *N. Foss. Misnia.* p. 83.

n. 59. Potters-Lead-Ore, adhering to a Ball of white talky Spar. The Spar consists of small flat roundish Plates wedg'd together in a very observable manner. Near the Lead are several small Gubes of a more clear and crystalline Spar. 'Twas found in a Bed of Clay, 44 Fathom deep, in a Lead Mine at *Hartley-Castle* in *Westmorland*.

n. 60. Lead-Ore in Form of a Nodule, very fine, and rich, yielding above half Lead. It consists of fine thin Plates differently disposed, and variously reflecting the Light. Found together with the following, n. 61.

n. 61. Another, with a thin rough grey Crust covering it, thorough which the Lead appears. These form'd Lumps are very rarely found. This lay 36 Fathom deep in Clay. There were some others along with it, from the Size of a Hazle-Nut to that of a Man's Fist. The Miners call this *Naked-Ore*. There was of the common Lead-Ore, in vast quantity, above these in a perpendicular Fissure, but none deeper; these Lumps lying at the Bottom of all. The Miners sunk deeper to search, but to no purpose. From *Reeves's Works*, in *Charteroux Liberty, Mendip*. The Lumps are of the same sort with those that they call in *Yorkshire, Boosework*; which are found there both in the perpendicular Fissures, and in the Bellies.

n. 62. Two Samples of Lead-Grains, so pure and fine, as to be near malleable. 'Tis shot into Figures, with plain sides, in manner

ner of Crystal, but not regular. From - - - - in *Cumberland*.  
Mr. *Nicolson*.

n. 63. Another Sample of the same sort, tho' the Lead be not quite so pure. The Shoots in this are larger than in either of the former; the Planes of some of them being above half an Inch over. Those Planes are of different Figures: the Workmen call this sort *Diced-Ore*. 'Tis found in the perpendicular Fissures of the Stone of the Mines, the Lumps of it being from the Bigness of a Walnut to that of a Man's Fist. This lay about 11 Yards deep. From Colonel *Byerlye's* Mines, on *Richmond-Moor*, 2 Miles West of *Richmond, Yorkshire*. It yields at least  $\frac{2}{3}$  Lead.

n. 63 \*. A Sample of the same Ore, and out of the same Mine. This has but little Lead in it; the far greater part of the Mass consisting of a white granulated soft Spar. The Grains are made up of a Congeries of short Fibres. In this Spar also there may be some Lead; that Metal sometimes affecting to shoot into such like Fibres, as in n. 54. & seq.

n. 64. A Piece of Lead-Ore, of the Potters kind, found in a perpendicular Fissure. *Thorngill* Lead-Mine, about a Mile from *Austen, Northumberland*. The *Austen-Moor* Potters-Ore yields Lead and Silver, much in the same Proportion with the Potters-Ore in the *Peak*. Conf n. 26. *supra*.

n. 65. Another, little different, found in a Stratum of the same Mine. This Stratum of Lead was in one part about a Foot thick, and lay fairly in view for about 30 Yards, but grew less gradually till it came to the thickness of about 3 Inches. What is here call'd a Stratum, was, probably, rather a *Float*.

n. 66. Another, not different, only that it has a little white Spar mix'd with it. From *Blay-gill* Lead-Mine, which is near the former.

n. 67. Another, with a pretty Quantity of white Spar lying in Veins among it. From Mr. *Bathurst's* Mine, *Arkendale*, in *Richmondshire*. It lay in the bottom of the Mine, 71 Yards deep, in the middle of a perpendicular Fissure, two Foot over, amongst an earthy Matter.

n. 68. Another, in nothing different, but that the Spar in some places is shot into small Crystals: also from Mr. *Bathurst's* Mine.

n. 69. A piece of Lead-Ore of that sort which the Miners call *Steel-Ore*. From *Hays*, two Miles East of *Austen, Northumberland*.

n. 70. Another, of the same Grain, with small Veins of white Spar in it. This is very brittle, and in a manner friable. From a Mine 24 Miles South-West of *Austen*.

n. 71. A piece of Lead-Ore, but much resembling a white Spar. It is thick set with small Cavities, over the whole Surface of it. Being broken in one place, it appears compos'd of small parallel Fibres. From the same Mine with n. 58. *supra*.

n. 72. Another, of the same sort, and from the same Mine. This is more diaphanous than the former, the Cavities pass deeper,



into the Body of it, and the Fibres lie in Sheafs, which variously interfect and cross one another.

n. 73. Lead-Ore of the Potters kind, with white Spar amongst it. From Sir Copleston Bamsfield's Mines at North-Moulton, Devonshire.

n. 74. A white talky Spar, with a flat Base, rising to an Apex, almost in manner of a Cone, only the Apex is not over the Center of the Base, but verges towards one side of the Body. 'Tis three Inches over at the Base, and near as many in height being composed of Plates standing erect, and jetting from the Axis to the Surface of the Cone. 'Tis very ponderous, and doubtless contains Lead in it: as also a little Copper, whereof the green Spots at the Base are a Sign. *Great-Ashby, Westmorland.*

n. 75. A Piece of the capillary, fibrous, or, as the Workmen call it, *stringy Ore*, from the same Vein in *Barrow-Work, Cumberland*, with that n. 56. from which it differs only in Colour, this being somewhat whiter. There are in it Specks of a yellow Matter: and Veins of grey; both probably Marcasite, or Sulphur. This stringy Ore is found but rarely. It grows at all depths of the Vein, in Hollows, where there is room for it to shoot, along with the Potters-Ore; which, with the cross-grain'd Ore, are the common Ores of this Mine.

n. 76. Some Fasciculi of Ore of the same sort with the foregoing: adhering to Part of the Stone of the end of the Stratum on the side of the Fissure. From the same Mine.

n. 77. A large Piece of the same sort, from the same Vein; with a considerable Quantity of the abovemention'd (n. 75.) yellow Matter amongst it.

n. 78. Another, less, with the Fasciculi smaller. From the same Vein.

n. 79. Another, with a reddish gritty Matter interspersed. From the same Vein.

n. 80. Another, with part of the Fasciculi white, part brown, and part black; little different from that n. 55. From still the same Vein in *Barrow-Work*.

n. 81. Another, little different from the foregoing; only on one side is a reddish gritty Matter, and several small capillary Bodies much like *Saccharum Saturni*. Also from the same Vein.

n. 81\*. Part of a Rib of Potters-Ore, on the outside of which is a thin Crust, composed chiefly of the white capillary Lead-Ore, from still the same Vein.

n. 81†. A Lump of very fine Potters-Ore; with the Surface covered all over with a thin Crust, composed partly of white Spar, and partly of the white capillary Lead-Ore. The Miners call it *coated Ore*. 'Twas found, among many others, some bigger, and some less, lying loose, sometimes in Clay, sometimes in an ochreous Matter of several Colours, call'd by the Miners *Soyls*, in the aforesaid Vein at *Barrow Work*.



n. 82. Lead-Ore, whitish with a Cast of brown; composed of small Chips, or Plates; placed, some parallel, some cross to one another. From Gravel-Work, near *Buckton*, in *Craven, Yorkshire*. The Miners call this *white Ore*. It holds somewhat more than  $\frac{1}{2}$  of Lead. It lies in a Vein, and is found in vast Quantity, there being little Ore of any other kind, except here and there some of the *blue Ore* as they call it, or *Potters-Ore*. This white Ore abounds in Arsenic: and is the most poisonous and noxious of any Ore whatever; the Fumes and Flores, lighting upon the Grass, kill the Cattle to near a Mile's distance from the Smelting Works.

n. 83. Another Sample, little different, only that there are intermix'd Specks of a pale yellow Matter, which I take to be Arsenic. And there is in it a Vein of mineral Matter, partly Red, and partly Brown. From the same Mine.

n. 84. Another, also from the same Vein, gritty, and appearing like a Mass of white shining Sand. There are in it Grains of a black glossy Matter.

n. 85. *White Lead-Ore*, little different from n. 82. with *Potters-Ore* amongst it, from the same Vein.

n. 86. Another Sample, also from the same Vein, but of a more dusky Complexion. 'Tis likewise much more firm and compact: and seems to be very rich. There is in it a Mass of *Potters-Ore*.

n. 87. Gritty Lead-Ore, variegated with white, yellow, brown, and black; yielding  $\frac{1}{3}$  Lead. From *St. Iffy, Cornwall*.

n. 88. A Mass of Lead-Ore, the Grain and Texture not unlike that of *Cauk*, of a pale brown Colour, and very ponderous. The Workmen call it *white milled Lead-Ore*. From *Erker gall, Montgomeryshire, Wales*.

n. 89. *Potters-Ore*, in a Mass of brown *Cauk*: with a reddish glittering Spar adhering to it. From a Vein in *Newlands, Cumberland*.

n. 90. Broad-grain'd, or *Potters-Ore*, with much white Spar intermix'd. *Moulds, Arkendale, Yorkshire*.

n. 91. Cross-grain'd Ore; with white Spar, part of it crystalliz'd. Out of a Vein, *Newlands, Cumberland*.

n. 92. Lead-Ore, in Spar, part of it white, and part tinged with purple, the rest with yellow, *Arkendale*.

n. 93. Lead-Ore, that adhered to the side of a Vein; with white Spar, and many small Shoots of Crystal along with it. *Arkendale*.

n. 94. A Plate of Lead-Ore that grew to the side of a Vein. To the opposite side of it adheres a coarse Spar, very tuberos and ragged; such as is commonly called by the Miners *Hungerstone*; because when it runs forth and sprouts in this manner, there must be much room in the Vein, and consequently little Ore there. *Arkendale*.

n. 95. Lead-Ore, with white *Cauk*: this was affix'd to a side of the Vein, part of which still adheres to it, the said side being composed of a common dusky brown Limestone, of which many of the Strata of this Mine consist. *Arkendale*.

n. 96.

n. 96. Lead-Ore, vein'd alternately with Ore and Cauk. From the same Mine. This has also adhering to it a Chip of the side, of Lime-stone: and in the middle of it, Edges of two thin Riders of the same sort of Stone.

n. 97. Two parallel Ribs of Lead-Ore, united by Intervention of Spar. On one Part, are *Vestigia* of the side of the Rock, to which it adhered; on the other, is a Crust of grey glittering Spar. *Moulds, Arkendale.*

n. 98. Part of a thin Rib of Lead-Ore, with sparry Efflorescencies on each side. *Arkendale.*

n. 99. Lead-Ore with Spar. From the side of a Vein. *Newlands.*

n. 100. Lead-Ore in Sparks, in grey Spar. There was much richer in the Vein, which was very large. *Howden-Field, Northumberland.*

n. 101. Lead-Ore, very coarse. *Comsomluck-Hill, Wales.*

n. 102. A Lump of Lead-Ore, from *Peran-Sand, Cornwall.* The Mine is 80 Foot deep. The Load is one Foot over; and runs East and West. Mr. *Kingston.* I have made no trial of this; but suspect it to have in it more of *Blende*, or black Talc, than of Lead.

n. 103. Cross-grain'd Lead-Ore, incorporated with yellow Mundick. From *St. Columb, Cornwall.*

n. 104. Cross-grain'd Lead-Ore, with Mundick, and green Copper-Ore. From *Charan-Math-Coh-Works, Cornwall.* The Load is eight Inches over, and runs East and West. This lay ten Fathom deep.

n. 105. Cross-grain'd Ore. This was part of a Rib that fill'd a String. *Newlands.*

n. 106. Part of another Rib, from the same Mine. When the Rib is thus thin, 'tis call'd *Shelly-Ore.*

n. 107. Cross-grain'd Ore, very fine, and holding near  $\frac{3}{4}$  Lead. *Barrow-Work, Cumberland.*

n. 108. Ore of much the same sort, but not so rich, with Spar and Marcasite in it. *Windegg, Arkendale.* This is the only Mine in *Arkendale* that has Sulphur with the Ore. They run it without any Addition of Iron; and indeed nothing is used in any of the Smelting-Mills, for any of the Ore of *Arkendale*, but Wood Peat, or Coal.

n. 109. Lead-Ore glossy and shining, formerly work'd for Silver, by the *Hochstetters.* *Caudbeck, Cumberland.*

n. 110. The best Broad-ey'd Lead-Ore, from Sir H. Mackworth's Mine, *Wales.*

n. 111. Broad-grain'd, or Potters-Ore, fine and clear. Holds near  $\frac{3}{4}$  Lead. *Moulds, Arkendale.*

n. 112. Another Mass, part of a Rib, with Cauk adhering to one side of it. From a Vein, or perpendicular Fissure, *Moulds, Arkendale.* 'Tis rich, and holds near  $\frac{3}{4}$  Lead. Indeed the Ore of this Work, if well dress'd, yields one with another, above  $\frac{3}{4}$  Lead in the Smelting-Works. This is of the Broad-grain'd or Smooth-grain'd Ore.

*n.* 113. *Small-grain'd Lead-Ore*, holding Silver, *Comarten*. 'Tis striated, as if there was some Antimony in it.

*n.* 114. A very hard stubborn Lead-Ore. *Nuton St. Syres, Devonshire*.

*n.* 115. Sparky Lead-Ore, little different from the Steel-grain'd. 'Tis in two Ribs join'd: out of a String. *Newlands*.

*n.* 116. Sparks of Lead-Ore, in a grey stony Matter; found in a Vein. *Howden-Field, Northumberland*.

*n.* 117. Steel-grain'd Lead-Ore, with Cauk, part white, and part greenish. Sent by the Name of *Silver-Ore*, from the *Silver-Mine* in *Beerlston Devonshire*.

*n.* 118. Broad-grain'd Lead-Ore, with the Surface very tuberos and unequal, out of a Vein. *Arkendale*.

*n.* 119. Grains of Lead-Ore, growing on a dusky grey Stone, that was part of a Rider. From the *Moulds, Arkendale*.

*n.* 120. Lead-Ore shot into Cubes, and oblong Squares, put together in such manner as to form a Plate or flat Body. It stood on edge, in a Vacuity of a Vein. *Totter-Gill-Intacks-Nook, Arkendale*.

*n.* 121. Another Plate from the same Vein, the Squares larger.

*n.* 122. Lead-Ore shot into Squares. The greater part of the Vein is thus shot, from a Mine of my Lord *William Pawlet*: I think it is called *Hindrake*, near *Redburgh*, in the *North-Riding of Yorkshire*.

*n.* 123. Lead-Ore very fine, shot into a multangular Figure, with *Marcasite* and Spar, in a Mine by *Stainmore*.

*n.* 124. Part of a Rib, very ponderous, fine, and rich, probably holding Silver. The Grain of it is in most Parts much smaller and finer than that of the common Steel-grain'd Ore. The Surface of this is pretty smooth. From a Vein in *Totter-Gill-Intacks, Arkendale*. Upon Trial of part of this, it yielded  $\frac{1}{4}$  Lead.

*n.* 125. Part of another Rib from the same Vein. The Surface is more rugged and tuberos. There are in it small Masses of the Potters kind interposed; but the main of the Body is striated, as if there were Antimony in it.

*n.* 126. Part of another, from the same Vein, with a Cauky Spar adhering to each Flat of it. The Grain of this is like that of *n.* 124. *supra*: but the Tubercles on the Outside of both this and *n.* 125. are of a Broad-grain'd Ore, and differ from that, in the middle of the Bodies.

*n.* 127. Lead-Ore, the purest and richest I ever saw; part of it being so very near the Constitution of melted Lead, that it may not unfirly be call'd Native Lead. This the Miners call *Naked-Ore*, as they do all other Kinds that are thus naked, and not covered with an extraneous Crust. *Arkendale*.

*n.* 128. A Lump of Naked Ore, extremely rich; found, lying loose and independent in a Vein, *Arkendale*.

*n.* 129. Part of a Rib of whitish Cauk, out of a Vein with small Lumps of very rich Lead-Ore inclosed in it. All the Ore I observed

observed in this Vein was of like sort, and lay in like manner. *Ruthberry-Forest. Northumberland.*

n. 130. Five Lumps of the same Ore beat out of the Caul. Their Surfaces are entire: and they part from the Caul in such manner, as to shew that the Lumps of Ore are distinct, and not incorporated or mingled promiscuously with the Caul, as is usual in the common Ores.

n. 131. Four Masses of a whitish cauky Spar, with Grains and Veins of Lead-Ore in them. These are rounded and worn smooth. They were found in a Rivulet, in *Arkendale*; and were probably born forth of the Veins of the neighbouring Mountains, by the Water rising out of those Veins.

n. 132. Lead-Ore of the Potters-kind, very fine. There is incorporated with it several Masses, of a white friable Substance, form'd into small Plates set edgeways; as also very numerous cubic Crystals, some of them transparent, but having a Cast of yellow; others opaque, having their exterior Surfaces black, and some few brown. This was taken up at the depth of about 30 Foot, in a Vein of a Mine of Mr. *W. Hodgkinson*, near *Ashover* in *Scarfsdale, Derbyshire*. That the Ore of any Metal shoots, proceeds, generally, merely from Crystal, combining with it in the Concretion and Formation of the Mass. Crystal, pure, and without Mixture of other Matter, concretes ever into an hexagonal Figure, pyramidal or columnar, terminating in an Apex or Point. Mineral or metallick Matter concreting with it, frequently determines it to other Figures peculiar to the Disposition of each Kind of that Matter. Iron concreting with Crystal, determines it to a rhomboid Figure \*: Tin, to a quadrilateral Pyramid †: Lead, to a Cubick ‡. Where the mineral or metallick Matter thus concreting with the Crystalline, is equally diffus'd throughout the Body of it, and in so small Quantity as not to be perceived by the Eye, the Body continues still near as transparent as Crystal. Where the mineral or metallick Matter is in greater Quantity, so as to take the Eye, the Body appears imbu'd and tinctur'd with the Colour, that the Mineral or Metal concreting with it, naturally gives and imparts; and is finer or higher, and more saturate, in proportion to the quantity of the mineral or metallick Admixture. 'Tis to this, that all the ting'd Crystals, and the various ting'd Gems, owe their Colours. Lead incorporating thus, imparts a yellow; Tin, a black; Copper a blue or green; Iron, a purple, amethystine, and all the various sorts of Red. Where the mineral or metallick Admixture with the Crystalline happens to be superior, and in so great quantity, as wholly to render the Body Opaque: and all shot or angular, Fossils that are Opaque, owe their angulated Figure chiefly to the Crystalline or harder gemmeous Matter, incorporated with

\* p. 19.

† m. 1.

‡ n. 59, 120, 132.

them.



them. No other Matter, that I have ever seen, concreting into such Figures; except, sometimes, a little Sulphur: of which there are Instances in some Pyrites and Marcasites. This Mass, n. 132. rightly reflected upon, exhibits some Phænomena that attest this Doctrine; and numerous other Instances there are, among the Bodies of this Catalogue, that give further Proof of it: to say nothing here of the Observations and Experiments in my other Papers, that favour and make it out.

## CLASS XI. PART IV.

### *The Ores of Iron.*

### P R E F A C E.

*There are some Ores in Germany that answer the Load-stone; in-  
somuch that, when finely powder'd, all the Iron leaves the Earthy  
Parts of the Ore, and applies itself to the Magnet.* Laz. Erckern.  
L. 4. c. 21.

*Iron is rarely found pure in the Earth, so as to be malleable.*  
vid. Agric. L. 5. p. 421. *supra*.

*From the Hæmatites, and some other Iron-Ores, are prepared se-  
veral Medicines that are in frequent use; tho' I confess, I cannot  
approve of them.*

### *Iron-Ores.*

### E X T R A C T.

#### I. Names used, by the Miners, to distinguish the several sorts of *Iron-Ores.*

*Brush Iron-Ore.* o. 22, 24.

*Smitt,* o. 95\*, 96. — also the *Mother of the Mine.* o. 96.

*Iron-Stone,* call'd by the Miners, *Cabala-Vein.* o. 3.

— *Gentle Pit-Ore.* o. 4.

— *Ball-Vein.* o. 5.

#### II. *The various Bodies work'd for Iron. Their Origin, Texture, Constitution, and Figure.*

*The Geodes, and other crufted Bodies work'd for Iron.* o. 1, 5, 6,  
7, 102.

*Iron Nodules in form of the Ludus Helmontij.* o. 29, 30, 31, 32,  
104, 105, 106.

*Iron Nodules ally'd to the piped waxen Vein.*

*Iron-Ore, soft, and in form of Clay.* o. 95, \*95, 96.

*Yellow Ochreous Bodies, yielding Iron.* o. 2.

*Yellow-Ochre in the Iron-Veins.* o. 12.

— *in the Iron Geodes.* o. 102.

*Red Ochreous Iron-Earth.* o. 62, 63.

*Red-Ochre in the Iron-Veins.* o. 13.

*Iron-Stone.* o. 3, 4, 5, 8, 34, & seq. 103.

Hæmatites,



Hæmatites, Iron-Ore. *o.* 42. & seq.

— compos'd of Crusts made up of transverse Fibres, like those of the fibrous Tales. *o.* 42. & seq.

Hæmatites sometimes form'd in Fissures, in the Forest of Dean. *o.* 11, 26.

— in Cornwall. *o.* 75.

Hæmatites having in it cubic Hollows, seeming to be Impressions of a cubic Spar, Pyrites, or other like Body. *o.* 47, 49, 50.

A Crust of Spar betwixt two Crusts of Hæmatites. *o.* 7 8.

Iron-Ore shot into quadrilateral Pyramids, as if it held Tin; the Grains of that Metal being naturally in that form. *o.* 82.

— shot into Rhombs. *o.* 16, 18, 19.

— with Shoots and Efflorescencies somewhat resembling Erica, or the common Heath. *o.* 85.

Iron Stalactitæ, found with the sparry, in the perpendicular Fissures, and form'd, after the same manner, by Water, bringing the ferreous Particles out of the Strata into the Fissures, where it quits them, after, by its falling, as by an Icicle, it has dispos'd them to concreate into that form. *o.* 20, 21, 22.

— several united in one Fascis; and, for that Reason, call'd Brush Iron-Ore. *o.* 22, 24.

— final, black, join'd in a Fasciculus, each striated from the Axis to the Surface. *o.* 26.

— with ferreous Rhombs upon them. *o.* 25, 27.

The Iron Stalactitæ continue to be form'd to this day. *o.* 23.

Iron-Ore breaking in manner of a Flint, of like compact Constitution, and striking Fire. *o.* 101.

Ferruginous Threads in Iron-Ore, seeming to be Native Iron. *o.* 11.

Iron-Ore, in a perpendicular Fissure, so rich as nearly to approach the Constitution of Native Iron. *o.* 81.

### III. *The Place and Manner in which Iron-Ore is found.*

Iron incorporated with the Sand constituting the Stone of the Strata. *o.* 3, 4, 5, 8, 34, & seq. *o.* 103.

Iron-Ore form'd in perpendicular-Fissures. *o.* 16, 19, 60, 81.

— a Load 3 Foot over, at Temple, in Cornwall. *o.* 97.

— running North-West, and South-East. *o.* 97.

Smelt found in Veins or perpendicular Fissures. *o.* 96.

Hæmatites lies in Bellies. *o.* 60.

An Iron Shoad-Stone, from the Peak, *o.* 41.

— from Cumberland. *o.* 100.

### IV. *Other Bodies incorporated with Iron-Ore.*

Iron Nodules with Lac Luna in the Shrinks or Cracks. *o.* 104, 105.

Iron-Ore with Spar. *o.* 11, 12, 84.

— with bright sparkling Spar. *o.* 101.

— with crystalliz'd Spar. *o.* 12, 13, 14.

— with

- with a reddish glittering talky Spar. *o.* 28.
- with Spar white with a Cast of Red. *o.* 98.
- with Crystals tinged red. *o.* 60, 61.
- with Marcasite, called by the Miners in *Cornwall, Cockle.*  
*o.* 99.
- with a brass-like shining Marcasite, holding Copper. *o.* 99.
- with Lead-Ore. *o.* 10, 12.
- with fibrous Talc. *o.* 74.
- Iron-Stone with a Vein of Coal in it. *o.* 36.
- with the Bodies call'd Screw-stones in it. *o.* 93.
- with Sea-shells in it. *o.* 4, 36, 38, 39, 40.
- Hæmatites with Spar crystalliz'd, semipellucid with a Tincture of red. *o.* 55, 59.

#### V. The Uses of these Bodies.

Of the Use of Hæmatites in Medicine. Preface to this Part.

*Smitt* us'd for a red Colour, by Painters *o.* 95 \*.

The Uses of Iron and of Steel are too many to be enumerated.

#### VI. The Proportion of Iron in the various Kinds of Ores.

Of the Fusion and smelting of them.

Iron-Stone, yielding  $\frac{1}{4}$  Iron. *o.* 34.

— yielding  $\frac{1}{3}$  Iron. *o.* 3.

Hæmatites, the richest of Iron-Ores, yielding  $\frac{1}{2}$  of Metal. *o.* 42.

The Geodes and other crustated Bodies run pretty freely in the Fire. *o.* 1.

Of the smelting of the Hæmatites Iron-Ore. *o.* 42.

#### Iron-Ores.

*o.* 1. A smooth flat Body of a brownish yellow Colour, about an Inch in breadth. From ----- in *Suffex*. Mr. *Harris*. 'Tis of a hard stoney Consistence: and scarcely holds above  $\frac{1}{6}$  Iron. It seems to have been a Nucleus, and included in a stoney Crust. Indeed this, and several of the Bodies work'd for Iron in *Suffex*, appear to be of the same Constitution with the Geodes and Bezoar Mineral. *Vid. o.* 5, 6, 7. *infra*. That likewise from *Derbyshire*, *o.* 7. is of the same Constitution. The *Suffex* Ores run pretty freely in the Fire for Iron-Ores; otherwise they would hardly be worth working.

*o.* 2. Another larger, and paler, as also softer, and indeed only an Ochre. This seems also to have been a Nucleus: and has Fragments of two ferruginous Crusts within one another, still adhering to it. They are about  $\frac{1}{12}$  of an Inch thick: and hold Iron. There is wedg'd into the Middle of it a Plate of about the same thickness, and much the same Constitution and Colour. From *Battle*, in *Suffex*.

*o.* 3. A piece of Stone flat, of a dusky brown Colour, with a slight Bluish of red. 'Tis said to be pretty rich in Iron. The Miners call this *Cabala Vein*. *Battle* in *Suffex*. This yields  $\frac{1}{3}$  Iron. *Conf. o.* 103. *infra*. *o.* 4.

o. 4. Another, of a somewhat paler Colour. This has several shining Sparks throughout the Body of it, which probably are Grains of Spar intermix'd with those of the Stone. 'Tis a Piece of a Stratum: and in one part of it are many Fragments of some sort of small Bivalve. It holds scarcely so much Iron as the former. They call it *Gentle-pit Ore*. *Battle, Sussex*.

o. 5. Another broad flat Piece, gradually lessening towards the Edges. The interior Substance of it is of a brown Colour, the exterior a brownish yellow. There are Fragments of thin Crusts of a ferruginous Colour adhering to the Surface of it. This yields near as much Iron as n. 3. They call it the *Ball-Vein*, *Battle in Sussex*.

o. 6. Another, likewise gradually thinning towards the Edges. 'Tis of a brown Colour. There are Fragments of five Crusts of a ferruginous Colour, tho' some darker, and others paler, one over another, adhering to it, each about  $\frac{1}{10}$  or  $\frac{1}{12}$  of an Inch thick. From *Battle in Sussex*.

o. 7. Another, of an Iron-grey Colour, its Surface brown. There was a Crust upon it of a ferruginous Colour, and about  $\frac{3}{4}$  of an Inch thick, which easily parted off from it. This holds but little Iron. From *Smally, in Derbyshire*.

o. 8. A Piece of Stone of a dark Iron-grey Colour, but in some Parts of a ferruginous Colour. There are many extremely small metalline Sparks mix'd throughout the Body of it. This seems to hold about  $\frac{1}{4}$  Iron, being more ponderous than any of the foregoing. From - - - - *Staffordshire*. There are thick Strata of this Stone. It lies about 15 Fathom deep over the Coal.

o. 10. Iron-Ore, said to hold also a small admixture of Lead. The interior Substance is of a grey Colour, shining: the Surface of a rust Colour. From - - - - near *Torbay, Devonshire*.

o. 11. Iron-Ore, of a dark ferruginous Colour, but in some places tending towards a yellow, and in others towards a white. There appear several shining sparry Sparks throughout the Body of it. In the middle of it is a Chink, or Hollow, lined with a shining Crust striated a-cross, like the Crusts of the *Hæmatites*, and appearing to be of the same Nature. There are several Threads of a ferruginous Colour, and seeming to be native Iron. There were other Pieces that had the same kinds of Crusts very plain. From *Cloverwall, in the Forest of Dean, Gloucestershire*.

o. 12. Iron-Ore, of a ferruginous Colour, having a great Quantity of white Spar incorporated with it. There are several Chinks in it, all lined with crystalliz'd Spar, of a *yellowish Cast*. (*Conf. o.*

13. & o. 20.) From the same Mines. I observed a *yellow Ochre*, in small Quantities, in some of the Veins of these Mines: and the Rust of the Iron of some Mines, is of a brown Colour, verging upon a yellow. Tho' that Colour may be owing to Lead incorporated with the Crystal that constitutes that Stone; because of the Colour of *Litharge*, and of *Vitrum Saturni*. This is certain, there is Lead in this Neighbourhood.

*o. 13.* Iron-Ore of a ferruginous Colour, but in some Parts of a light brown. Throughout the whole Substance of it are extreme small Sparks of a glistering Spar. There are in it several Chinks, all beset with a crystallized Spar, which in some is white, in others diaphanous, in others yellowish, in one brown, and in another red. The Mass near this Chink is of a lively deep red Colour, and heightens the nearer it approaches the Chink, which besides the Spar has a fine bright red Ochre in it. From the same Mines.

*o. 14.* Another Piece, of an Iron-grey Colour, full of Hollows beset with a diaphanous crystalliz'd Spar. From the same Mines.

*o. 15.* A piece of Iron-Ore of a ferruginous Colour. Throughout the Substance of it are several thin Plates, of near the same Colour, placed parallel to each other. The Intervals of these Plates are, in some places, fill'd with the said Iron-Ore, in others with a diaphanous Spar. From a Fissure of the Stone in the same Mines.

*o. 16.* A piece of the Stone of the same Mines, of a yellowish brown Colour, an arenaceous friable Substance, and with some white Spar mix'd with it. 'Twas broken from the side of a perpendicular Fissure. There are adhering to it small white sparry crystalliz'd Bodies, of several sides, in vast numbers. These, for the main, are placed in Rows, parallel to each other, and generally set each, in a thin ferruginous Socket. There are amongst them some Crystallizations of a rhomboid Figure. They are about  $\frac{1}{4}$  of an Inch in Diameter, wholly opaque, tho' the Surfaces be polite and shining, some of an Ochre, others of a rust Colour.

*o. 17.* Another, found together with the former, and little different from it.

*o. 18.* Iron-Ore of a deep ferruginous Colour, with Veins of a white and yellowish Spar. In it are several Cells beset with Cubes or Rhombs, not different from those in *o. 16.* only that they are all of a somewhat deeper rust Colour from the same Mines.

*o. 19.* Stone of the same sort with that *o. 16.* from the side of a perpendicular Fissure. There's upon it an Irony Crust, having an Admixture of Spar with it; and from that Crust rises a striated Substance, partly of a ferruginous, and partly of an ochreous Colour, in Texture much resembling rotten Wood. Upon this, grow many of the aforesaid Rhombs, of a light ferruginous Colour. Some of the Rhombs, near the Crust, being broken, shew that they consist of two Parts; there being in the Centre a greyish sparry Rhomb, included in a ferruginous rhomboid Case. From the same Mines.

*o. 20.* Small roundish Columns of a dark brown Colour, placed near a Parallel to one another, and cemented together by a white Spar with a yellowish Cast. The Outsides of the Columns, I mean the Sides that terminate at the Surface of the Sheaf or Fascis of Columns, are frosted over, or thick set with small Sparks of a crystalliz'd Spar with a yellow Cast. Still from the same



Mines. This was found in an hanging Posture in a perpendicular Fissure; and the Columns are no other than several Stalactitæ, partly ferreous, and partly sparry, run into one Body and conjoin'd together.

*o. 21.* Another found in the same Posture; and in the same Fissure, but three Yards distance. This is little different from the former, only some of the Columns are red; and the sparry Frost without more pellucid, and without any Cast of yellow.

*o. 22.* Other like parallel Columns, consisting of a Mixture of Iron-Ore, and Spar of a very dusky brown Colour without, but somewhat more pale within. 'Twas found in another Fissure in a hanging Posture, adhering to a reddish Stone, part of which is broke off with it. In the same Mines. This is what is called *Brush-Iron-Ore*. The Columns are of about the Thickness of a midling Goose-Quill.

*o. 23.* Another Sample, little different from the former, only the Columns are somewhat more distinct, found hanging in like manner from the Roof or Top of the Vault of an old Work now deserted. The Ore was exhausted; and these Bodies are grown since the Miners left off working this Mine. There are a great many of these hanging from the top of the same Vaults.

*o. 24.* Another, the Columns somewhat less, rougher and more uneven in their Surface, and of a lighter brown Colour. They lessen gradually as they descend, 'till at last they end in an Apex or Point. There are a few angular Crystallizations, not different in Substance or Colour from the rest of the Body, on the Outfides of some of the Columns. From the same Mines, and hanging down in the same manner.

*o. 25.* Another, the Columns of a lighter brown, with a larger Admixture of Spar in them. The Outfides of them are set all over with Crystallizations of the same Colour, all tending towards a rhomboid Figure. Found in the same manner, in those Mines also.

*o. 26.* Another, chiefly of a black Colour. The Columns are broken off short, and are of the thickness of a Crow's-Quill. Within, they appear very black and shining, and are striated or radiated from their Axis to their Surface. In some Parts of the Mass to which these Columns adhere, are Edges of Crusts, of the same Colour and Constitution with the Columns, but striated across, like those of the Hematites. From the same Mines.

*o. 27.* Another of a reddish Colour: 'Tis in some Parts run into Columns, grosser, but not so distinct, as in *o. 22.* & *23.* The Surface is set all over with red Crystallizations, tending towards a rhomboid Figure, sparkling and briskly reflecting the Light; and so placed, that their Edges stand generally to the Surface. From a Fissure of the same Mines.

*o. 28.* A piece of Iron-Ore of a black Colour externally, and its Surface very unequal, much resembling a Cinder or Slag. Internally the Colour is a reddish brown. The Substance perforated  
with



with several parallel Pores; some of them empty, others fill'd with a reddish glittering talky Spar. From a Fissure of the same Mines. This is very rich.

o. 29. A Mass of an irregular Figure. 'Tis black without; and where broken, appears to be of a rust-colour. From *Dudley Iron-Mines in Staffordshire*. This is one of the Tali of a Nodule in form of the *Lodus Helmontij*. *Conf. o. 105. infra.*

o. 30. Another, very black, both within and without. Where 'tis broke, there adheres a thin Film of a white Matter, like that call'd by Mineralists, *Lac Luna*. Out of the same Mine with the former. *Conf. o. 105. infra.*

o. 31. Another, for the main of a rust-colour, with some Intermixture of black and yellowish. From the same Mine still. *Conf. o. 105. infra.*

o. 32. Another, brown without, and of an ash-colour within. From the Iron-Mines of *Woddesbury in Staffordshire*.

o. 33. Another of a reddish brown without, and a somewhat more dusky brown within. From the Iron-Mines of *Walsal, Staffordshire*. Where broken, it exhibits some whitish Films, like thole in o. 30.

o. 34. A flat piece of an Iron-Stone; its two opposite flat Surfaces black. Where broken, it shews an ash-colour, with some yellowish Spots. From *Godnor in Derbyshire*. This is the most common Iron-Ore, or rather Iron-Stone, of *England*. 'Tis of the middling Tenor, and yields about  $\frac{1}{4}$  of Iron.

o. 35. Another of a dark-grey Colour, with a blush of red. From the same Mine.

o. 36. Another, of near the same Colour. There's in it a Vein of Coal of a very bright black; and another of a brown Spar. On one side is the Impression of a Bivalve, and some Flakes of the Shell still adhering to the Stone. From the same Mine.

o. 37. Another, of still the same Colour, with Veins of a brownish Spar. From the same Mine.

o. 38. Another, the Colour grey, yellowish, with a dusky brown. There are upon it Impressions of Bivalves of several sorts, and of different sizes. From ----- in *Suffex*. Mr. *Harris*.

o. 39. Another piece of Iron-Stone, one side of a yellowish, the other of a reddish brown. On this side are Impressions of several small Bivalves. From ----- in *Suffex*. Mr. *Harris*.

o. 40. Another, of a very dark brown. There are several turbated Shells in it: Some of them fill'd with this Stone, others with white Spar. The Shells are generally perish'd and gone, and the Places of several of them fill'd with the same sort of white Spar. From ----- in *Suffex*. Mr. *Harris*.

o. 41. A small Stone smooth without, and of a dark Liver Colour. 'Tis of the same Colour within, with the Addition of a faint Cast of Purple. From *Workworth in the Peak*. This is what the Miners in *Cornwall* call a *Shoad-Stone*; it being a Fragment, broke off an Iron Vein, by the Water of the Deluge departing;

ing; worn and smooth'd, by being hurry'd along by it; and finally left behind. *Conf.* 4. o. 100. *infra*.

o. 42. A Lump of Iron-Ore of a deep dusky red Colour. This is of that sort which is call'd by Mineralists *Lapis Hamatites*. Towards the Surface, 'tis cover'd with several Crusts, the thickest about  $\frac{1}{2}$  of an Inch, the thinnest not above  $\frac{1}{24}$ . They lie close to and are exactly fitted upon one another. They consist intirely of transverse Fibres. The Surface is smooth, shining, and rising all over, in an elegant manner, into globular *Tubera* and Inequalities, not ill resembling a Cluster of Grapes. From the Iron-Mines of *Langron* near *Whitehaven*, *Cumberland*. *Conf.* CLASS 3. c. 263. The Factitious *Cinnabar* or *Cinnabar* of Antimony, much resembles the *Hematites* in its fibrous Texture, and other ways. Now this Body is form'd in the Fire; and the *Hamatites* seems to have been so too; tho' it be difficult to account for that. The *Hamatites* Iron-Ore is found here, about *Whitehaven*, in great quantity. It yields about  $\frac{2}{3}$  in Iron; and is, perhaps, as rich as any in the World. It comes at the first Fusion into a Mass that is immediately malleable, and will not run thin, so as to cast and mould, unless mix'd with poorer Ore, or Cinders. 'Tis carried over, and work'd up, chiefly in several parts of *Ireland*, where Wood is more plentiful, than in *England*. Besides, they carry it into *Cheeshire*, *Staffordshire*, and *Pembrokeshire*, and there melt it down with their poorer Ores; it promoting their Fusion, and fetching the Iron of those Ores more freely and fully out.

o. 43. Another, little different, only in the Body of it, now broken, appear small Sparks of a glittering Spar. From the same Mines.

o. 44. Another, having only one Crust or Shell at the Surface, of about the thickness of a Line. The Globules in this, are smaller, the Surface more unequal, and the Body redder than either of the former. From the same Mines.

o. 45. Another, little different from n. 42. From the Iron-Mines of *Furness* in *Lancashire*. Mr. *Fitz-Roberts*.

o. 46. Another, consisting of several Crusts; whereof the innermost is near half an Inch thick, black, shining, and polite, and without any transverse *Stria* or Filaments. From the Mines of *Langron*, *Cumberland*.

o. 47. Another, consisting of only one Shell, breaking into several unequal Planes, black, shining, and polite, without any *Stria*. From the Mines of *Langhorn*, *Cumberland*. On the Inside of this is a cubical Cavity of about  $\frac{1}{2}$  of an Inch in Diameter, with several lesser, as if there had been either cubic Spar, *Pyrite*, or other like Bodies, lodged in it.

o. 48. Two Crusts, one upon another, each about  $\frac{1}{12}$  of an Inch in Thickness, and striated a-cross. From the same Mines.

o. 49. An *Hamatites* little different from that o. 46. only in the inner part, appears a cubical Cavity half an Inch over, and 2 or 3 lesser like Cavities. From the same Mines.

*o. 50.* Another, with like Cavities and Crusts, only the interior thick Crust in this is striated. From the same Mines.

*o. 51.* Another, little different from *o. 42.* only the transverse *Stria* are scarcely so strong and conspicuous. From the same Mines.

*o. 52.* Another, consisting of only one Crust, an Inch in thickness, striated, black, and shining. The Surface of this is rough and porous. From the same Mines. This has a Cast towards Purple.

*o. 53.* Another, little different from the preceding, saving that 'tis redder, and its Surface smoother. From the same Mines.

*o. 54.* Another, within of a gritty Stone-like Substance, of an iron-grey Colour, in some places cover'd with a red Crust striated a-crofs, and rising into small globular *Tubera*. From the same Mines of *Langhorn, Cumberland*.

*o. 55.* Another, broad, and near flat, consisting of 5 Crusts. The two exterior are red, and transversely striated: the rest black and sparkling much like a piece of Steel when fresh broken. The Crusts being in some places a little distanc'd, there are in the Intervals several Sparks of a crystalliz'd Spar, most of it of a reddish Colour. From the same Mines. The Surface rises into Pustules very thick, but they are lower and flatter than in most of the foregoing. *Confer.* CLASS. 3. c. 265.

*o. 56.* Two Crusts of an *Hæmatites*, each about  $\frac{1}{2}$  an Inch thick. The outer, red, pretty smooth, and striated a-crofs; the inner, black, shining and sparkling like Steel, when first broken. On the inside of this, are many small, thin, black, shining Plates standing irregularly, but generally edgewise, by each other. From still the same Mines.

*o. 57.* Another, little different from the foregoing. From the same Mines.

*o. 58.* Another, seeming to consist of many Fragments of Crusts striated a-crofs, and irregularly placed on one another. 'Tis of a dusky rust Colour, glossy, with a faint Cast of Red. From the same Mines of *Langron, Cumberland*.

*o. 59.* Three Crusts of an *Hæmatites*, adhering to each other, and cross'd with fine small *Stria*. They are of a dark iron Colour, with a faint blue Cast. On the Surface of the outermost, is a crystalliz'd Spar, semipellucid, and white, with a faint Tincture of red. From the same Mines.

*o. 60.* An Iron-Ore of a dark Colour, with a slight Cast of red. There are adhering on the sides of it, several sparry Crystallizations hexagonal and pointed, where they had room to shoot. Some of them are diaphanous; others white; others of an iron red, very bright, shining, and polite; others not polite, but appearing as if powder'd over with an extreme fine Iron-dust. From the same Mines. This, the precedent and following Samples were taken out of

Fissures of the Stone adjacent to the Bellies or Receptacles of the Ore of these Bellies and the *Langron* Mines.

o. 61. Another, little different from the former. In this one of the Crystalline Shoots is very distinct, large and fair. 'Tis red, shining, and polite: only one side of it appears rougher, and as if sprinkled over with a fine impalpable Iron-dust. From the same Mines of *Langron*.

o. 62. A Body like a Red-Ochre, somewhat friable, and very thick set with very small blackish Sparks, appearing like Steel-dust. From the same Mines at *Langhorn*. I have a sort of Native Cinnabar from *Hungary*, very like this; and the Artificial, or Cinnabar of Antimony, commonly much resembles this, only in that the Sparks are commonly smaller.

o. 63. Another, not so red or friable: but thick set with like blackish shining Sparks. Amongst them in some parts are Brass-like shining Sparks: in others small Spots of a lovely bright blue Colour. From the same Mines.

o. 64. A Tuberous Hæmatites. From *Langron*, in *Cumberland*.

o. 65. Another, from the same Mine.

o. 66, 67, 68, 69, 70, 71, 72, 73. Parts of Tuberous Hæmatites shewing several Varieties in the Crusts, Striation, Texture, and Constitution of this Body. From the same Mine.

o. 74. Part of a very thick Crust of that sort of Iron-Ore call'd Hæmatites. From the same Mine at *Langhorn*. 'Tis two Inches and  $\frac{1}{4}$  in Diameter, and striated a-crofs. The fibrous Grain of this comes up so nearly to that of the fibrous Talc  $\dagger$  d. 1. and  $\dagger$  d. 11 \*, that I cannot but suspect that the fibrous Structure of these Crusts of the Hæmatites, and other like Bodies, is owing to an intermixture, of this sort of Talc, with the Iron in these, and the various other Matter that constitutes those other Bodies, in the Formation of them.

o. 75. A small Body, appearing to be of the Hæmatites kind. Dug up about three Miles from *Pensance* in *Cornwall*. Dr. Coamar. He informs me that this sort has been lately discovered there in considerable Quantity.

o. 76. A plated Hæmatites. From *Langron* in *Cumberland*. [Concerning these Plates, see the Account of that Mine, p. 24.]

o. 76 \*. Another, with small Tubers arising out of it. From the same Mine.

o. 77. Another, from the same Mine.

o. 78. Another, from still the same Mine. This, betwixt the Crusts of Hæmatites, has a parallel Crust of Spar.

o. 79. A Piece of Iron-Ore, with Efflorescencies, of much the same Constitution with those of the Hæmatites, rising from it. There are also Sparks of Spar appearing in several Parts of it. From Mr. Steel's Mine, which is about two Miles distant from the great Mine, at *Langron*, in *Cumberland*. There is, in this, a Crack; which seems to have been a Shrink, or Contraction, in the



the Body since 'twas first form'd. Of these Shrinks, see the Account of the *Lulus Helmontij*, CLASS 4. *supra*.

o.80. A Piece of Iron-Ore, black, with a Cast of red, glossy, and shining. It somewhat approaches the *Hæmatites*. From *Furness in Lancashire*.

o.81. A Mass of Iron-Ore, extremely fine, with Efflorescencies and Tubera so rich that they very nearly approach the Constitution of Native Iron. Found in a perpendicular Fissure, in the middle of the *Skrees*, a vastly high Mountain in the Estate of the Duke of *Somerset*, in *Walsdale*, in *Cumberland*. This sort is very rare; but, in the Veins and Fissures of this Mountain, there is a considerable Quantity of good Iron-Ore, tho' it be not search'd after, or work'd.

o.82. Another Piece, very rich, in which Part of the Ore is shot into quadrilateral Pyramids, the Figure of the Tin-Grains, as if there was some of this Metal likewise in the Mass. From the same Vein.

o.83. A Piece of Iron-Ore, approaching the *Hæmatites*, very hard, close, ponderous, and rich, of a flinty Constitution, and striking Fire very freely. From the same Fissure, in the *Skrees*. Vid. o. 101. *infra*.

o.84. A Piece of Iron-Ore, not quite so hard as the foregoing, but very rich; of a dusky red Colour; with an intermixture of a whitish glossy Spar. From still the same Fissure, in the *Skrees* Mountain.

o.85. A Piece of Iron-Ore, with Tubera, Shoots, and Efflorescencies, very fine. Taken out of a perpendicular Fissure near the top of a very vastly High Mountain, about half a Mile from *Longthwaighe-Gill* in *Cumberland*. This Vein holds a great deal of very good Iron-Ore: but 'tis not known, or work'd. The Efflorescencies in this Sample, are not to be compared with several that I observed, in some Parts of the Ore of the same Vein; but they were so tender and brittle that I could not easily preserve them. They arose, like Vegetables, with a single Stem; which parted afterwards into several Branches. I observed of all Sizes of them, to the Height of near two Inches. The Stems were round: and the Branches; only these, towards their Extremities, were jagg'd in such sort, that they there resembled the common Heath. They were exactly of the Complexion of Iron, a dusky red, with a Cast of blue.

o.86. Another Sample, with Efflorescencies not less observable. From the same Vein, or Fissure, in the *Skrees* Mountain.

o.87. Another, very fine, and rich; from the same Vein.

o.88. Another, from the same Vein.

o.89. Another, from still the same Vein.

o.90. A Piece of Iron-Ore, extremely rich, and very hard, of a Steel Complexion; with an intermixture of Sparks of Spar. From a perpendicular Fissure in the *Skrees*, about a Mile distant from that mention'd o. 81. The Ore got lately at *Trislington*,



near *Whitehaven*, is of much the same sort: but poorer and more stoney.

o. 91. Iron-Ore, of a blackish Cast, from *Newcastle under Line, Staffordshire*.

o. 92. Another, not much different. *Suffex*.

o. 93. Iron-Stone, of a dusky red Colour; with an intermixture of a glossy Spar, having in it several small Bodies of that sort that are commonly called Screw-stones. From - - - - Mines, near *Winander-Meer*, in *Lancashire*.

o. 94. Iron-Ore, of a middle Nature betwixt the Clayey and Stoney sort. From *Langron-Mine, Cumberland*.

o. 95. The soft, or Clayey Iron-Ore, from *Langron, Cumberland*.

o. 95\*. More of the same, somewhat softer, and work'd up into a Ball of the bigness of an Hen's-Egg. They commonly make up this sort into this Form: and sell it for the *Smitting*, as they call it in the North, or Marking of Sheep: For which Reason also they call it *Smitt*. This is unctuous or oily: as are most of the Bodies in the *Langron-Mine*, whence this came. This is used by Painters: and makes a Red, little inferior to the *Indian Red-Earth*.

o. 96. Like Clayey Iron-Ore. Found in the *Skrees*, in the same Fissure with o. 81. This is the finest of the Clayey-Ore: and, thus made up into Balls, they use this also for marking of Sheep, and call it *Smitt*. The Miners call it *the Mother of the Mine*.

o. 97. A Mass of a deep grey Colour, bright, sparkling and very much like Steel, where broken, only the Grain is somewhat larger. I have not try'd it: but it seems to hold Iron. From *Temple, Cornwall*. 'Twas part of a Load, three Foot over, and running North-West and South-East.

o. 98. A black glossy Iron-Ore, having in it a little Spar, white, with a Cast of red. From *Mulberry-Works, in Lanevet, Cornwall*.

o. 99. Iron-Ore, in some Parts brown with a Cast of red: in others of a dusky Complexion, near black. There are also in it Parts of a Brass-like, shining *Marcasite*: and 'tis very probable there is Copper in the Mass. The Miners call this sort *Cockle*. From - - - - in *Cornwall*.

o. 100. A Mass somewhat larger, and of a Grain more smooth and fine, otherwise of much the same Colour and Composition with that o. 41. *supra*. Found among Pebbles, near *Penrith, Cumberland*. Lord Bishop of *Carlisle*. This appears plainly to be a Sheaf-stone, born from some very rich Iron-Vein.

o. 101. A Piece of Iron-Ore, of a dark Liver Colour. It breaks like a Flint: and its Constitution is near as compact and fine. On one side, in a small Cavity, is a bright sparkling Spar. *Newent, Gloucestershire*. It strikes Fire, as that o. 83. *supra*, does.

o. 102. Part of a Nodule, flat, and almost square. 'Tis near an Inch in Thickness: four Inches over one way, and above three another,

another, where it has been broke. In the middle is a Matter pretty hard: grey, with a Cast of yellow. This is invested with a Crust of a deep red Colour: and, without all, is a Crust of a Colour more dusky and near black. Betwixt the two Crusts is a fine yellow Ochre. This Body is nearly ally'd to the Iron Ores. o. 5. 6. and 7. *supra*. and indeed both those and this to the Geodes, and mineral Bezoars. Found among Marl, near *Hunton*, in *Kent*, in the Pit mention'd by Dr. *Halley*, Philosophical Transactions, N<sup>o</sup> 155. p. 463. These Bodies are found in that Pit but sparingly: but are got 10 or 12 Miles off, at - - - in greater plenty; where they are smelted, cast into Guns, wrought into Bars, &c.

o. 103. Iron-Stone, the Colour dark grey, near black: of a Constitution much like that o. 3. *supra*. From - - - in *Staffordshire*.

o. 104. Part of a very large Mass of the stoney Iron-Ore, from *Weddesbury* in *Staffordshire*. There are large Masses rais'd of it. 'Tis very hard: and of a dark grey Colour. There are in some Parts of it Cylindric Cavities: and some of them have Pipes in them, in shape not unlike those of the piped waxen Vein; but they are generally of a blackish ferruginous Constitution. Not but that, in some Parts of the Stone, I have observ'd, in breaking of it, Spar very like the sparry Matter of the piped waxen Vein: and in others a coarser Spar, with a white light farinaceous Matter, exactly like the *Lac Luna*. I also observed, in some few Parts, Plates of a white Spar, not unlike those in some of the less perfect *Lodus Helmontij*.

o. 105. The finer Iron-Ore, from *Weddesbury*. This was part of a Nodule, of the bigness of a Man's Head. 'Twas apparently of the Texture and Composure of the *Lodus Helmontij*; consisting of several Tali, parted generally from one another by Intervention of that fine white dusty Matter, commonly call'd *Lac Luna*: but sometimes by thin Plates of a whitish Spar, very friable, and reducible to a Ponder, like that of *Lac Luna*. And indeed this seems to be no other than that very Mineral incorporated with a very small Proportion of Crystal. Perhaps, one sort of the coarser white Spar is made of that very Composition: I mean, of the Farina of *Lac Luna* incorporated with crystalline Matter. And as the one or other is superior in quantity, the Body is more or less diaphanous. There are other kinds of Matter that are frequently found intermix'd with Spar: but I take the *Lac Luna* to be the most common of any in the white Crusted Spar of *Gloucestershire*. This is certain, that *Lac Luna* is very frequently found in the Fissures of the Stone, in great plenty in the Quarries about *Sherborn* in *Gloucestershire*, loose in the perpendicular Fissures, along with the Spar: And indeed, in many of the Quarries of that, of *Northamptonshire*, and the neighbouring Counties, as well as elsewhere in many other Parts, in

the Quarries, and Mines \*. This Specimen of Ore is part of the out-side of the Lump, which was a Nodule, and lay loose in the Bed. 'Twas of a shattery Constitution: and very easily broke to pieces. There is one of the Tali along with it.

o. 106. Part of another Core or Talus, out of the Nodule before-mention'd. These are hard and pretty rich of Iron. They do not split with a Grain: but break irregularly and uncertainly, like Flints.

## APPENDIX to CLASS XI. PART IV.

*Mineral Bodies that contain in them more or less of Iron.*

### SECT. I. *Magnes, the Load-stone.*

#### P R E F A C E.

*A Load-stone that weigh'd but 11 Grains would take up a Piece of Iron of an Ounce in weight. Sir J. Pettus's Dictionary to L. Erckern, in Load-stone.*

### SECT. I. *Load-stone.*

† o. 1. A piece of Load-stone, of a dusky blackish Colour, with a Cast of an Iron-Colour, and several black glossy Sparks. There is incorporated with it a white Spar. Its Magnetick Power is very little. From - - - in *Devonshire*. Mr. Robert Ball.

† o. 2. A piece of Load-stone, black, shining, and ponderous: with a Vein of Granates in it. From - - - in *Devonshire*. Mr. John Walter.

### SECT. II. *Magnesia, Manganese.*

.x. o. 1. Manganese, without of a reddish rust-colour, within more black. 'Tis porous, and not very heavy. From the *Charter-house Liberties, Mendip*.

.x. o. 2. Manganese, of a dusky grey Colour, near black: and of a Constitution more firm, close, and hard, than the former. From - - - upon *Mendip, Somersetshire*.

### SECT. III. *The Crustated ferruginous Bodies: Bezoar Minerale, Geodes, Enhydros.*

#### P R E F A C E.

*These Bodies have generally Iron in them, more or less; for which reason it is that they are ranked in this Place. Indeed, some of them hold so much Iron, that they are work'd and smelted for it. Confer. o. 1, 5, 6, 7, 102. supra.*

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\* See some Specimens of Lac Luna in Spar, in my English Collection. f. 39. to f. 46.

For the better distinguishing these Bodies, it may not be amiss to give the discriminative Characters of each, out of my methodical Distribution of Fossils into Classes, published at the end of my Answer to Dr. Camerarius, pag. 4, 5. Class 2. Cap. 2. Memb. 1. Artic. 2. Sect. 5. "Stones consisting commonly of several Crusts one within another. 1. Having the Crusts close, cohering, and no Cavity within, BEZOAR MINERALE: or, 2. Having in them a Cavity, with Matter in it, loose, and moveable; either, first, solid, and stoney, call'd a Callimus, ÆTITES: or, secondly, loose, as Sand, Ochre, Chalk, Earth, GEODES: or, 3. liquid, ENHYDROS."

The flinty Ætitæ are set forth in Class III. in which the several Varieties of Flints are exhibited. The Ochreco-ferreous Ætitæ are of the Constitution of the Bodies treated of here: and, as I have observ'd several of this latter sort, I kept some; but know not by what Accident they have been since lost: so that there are none entered here.

As for the other Bodies set forth here, they are not placed in good order. But I must not now pretend to vary the Method, or the Numbers, because they are referr'd to, under the Numbers they stand here, in some of my other Papers.

#### *The Crustated ferruginous Bodies.*

† o. 1. Enhydros. A Body of a flattish Form, and about the bigness of a Man's Fist. 'Tis broke, and by that means two Cavities discovered within it. The bigger of them is of about the Capacity of the Shell of a Turkey-Egg: the lesser, of about that of a Pigeon. It is constituted mainly of 3 Crusts, within one another; which easily flake and subdivide into other thinner ones. The innermost is not above  $\frac{7}{10}$  of an Inch in thickness: the middlemost about  $\frac{1}{2}$ : and the exterior about  $\frac{1}{4}$ . 'Tis, for the main, of a yellowish brown Colour: but in some Places of a darker and ferruginous Hue. This I took forth of a Stratum of Clay, in which was a great deal of fine Sand, 15 Foot deep, in *Caen-Wood*, betwixt *Hamslead* and *High-gate*. It had a Liquor in the Cavities of it: and is one of those Bodies the Antients called *Evudros*.

† o. 2. A Piece of another, little different, parted into several Cells. The Surfaces of the Crusts of this rise into Scales, and Flakes. Found with the former.

The two precedent Enhydri were found, amongst many others, in sinking the Wells in *Caen-Wood*; whence that Water which we call the *Hamslead* Water is derived, and convey'd first into great Ponds at the bottom of the Hills, in which those Wells are sunk, and from thence by Pipes to *London*. I was down only in one of the Wells, which they were then in digging: but I saw several of these Enhydri, with a pretty many *Pyritæ*, amongst the Earth that was flung forth of the other Wells. They are of several Sizes, from the bigness of a Walnut, to about 2 Foot in breadth. They are generally of a compress'd Shape: and



and lessen or grow thinner towards the Edge or Ambitus of them. Those that I saw, lay about 15 or 16 Foot deep, in a Stratum of sandy Clay: The Surfaces of that Stratum, and the Flats or larger Plains of the Enhydri lay parallel, and level. They were all hollow, and usually divided into several Cells, but these were uncertain, both as to their Number, Figure, and Capacity. The Partitions of the Cells were rarely very thick. The outer Coat was in some double, in others triple, and in a few quadruple; as consisting of 2, 3, or 4 stoney Crusts, involving and carrying one another. They were, for the main, of the same Constitution with those of the two described above. The Cavities or Cells were generally near full of an insipid Coagulum, or Liquor, about the Consistence of Cream, though in here and there one 'twas a little thicker. 'Twas most commonly of a greyish Colour: but in some few 'twas of a blueish, and in others of a blackish Hue.

† o. 3. Another Enhydros, of an oval Shape, and near as big as a Man's Fist. 'Tis broken in two, and the Sides or Parietes of it are about half an Inch thick. In the middle of it is an oval Cavity, lin'd all over in an elegant manner, with a reticulated Work, the Meshes all of near the same Size, and capable of admitting a Body somewhat bigger than a Rape-Seed. Both the Reticulum, and outer Surface, are of a yellow Ochre Colour; but the inner Substance is of a darker, or ferruginous. This was found somewhere on *Mendip* in *Somersetshire*: but whether in the *Calamin-Mines*, or where else, I cannot recollect.

† o. 4. Bezoar-mineral, a small Stone of a rust Colour, with an Admixture of Ochre. It consists of several Coats or Crusts inclosed one in another: and is what is commonly called the Bezoar-mineral, found on the Shore of the Sea near *Orthorn* in *Yorkshire*. It appears to have been toss'd to and again by the Motion of the Sea upon the Shores, which has ground away part of several of the outer Coats, and uncovered the inner ones.

† o. 5. A Geodes, consisting of two or three Coats. 'Tis hollow, and had the Cavity filled with a rust colour'd Ochreous Powder. The Coats, where broken, appear of a dark ferruginous Colour. The Surface is very scabrous, and chop'd like the Bark of an old Tree; both that, and the inner Surface, being of a yellow Colour. 'Twas found in a Stratum of Gravel, in the great Gravel-Pit, on the East-side of *Hyde-Park*, without the Pale, where these Bodies are pretty commonly met with.

† o. 6. Another Geodes, very scabrous, and hollow, made up of several very thin Coats of a ferruginous Colour, with an Intermixture of Ochre. From the same Gravel-Pit. The Cavity was filled with a loose brown Ochreous Matter.

† o. 7. Another Geodes, likewise having an hollow, in the middle, filled with a loose yellowish Ochreous Matter. It consists of three Crusts, the middlemost much thicker than either of the other, being  $\frac{1}{2}$  of an Inch across. 'Tis within, where broken, of



a rust Colour: the outer Surface yellow, and prettily cover'd over with a sort of Net-work. Found in a Gravel-Pit near *Newington-Green*.

† o. 9. A whitish Body, with a Cast of yellow, friable, but rather harder than Chalk, inclosed in an hard, dusky, ferruginous Crust, about  $\frac{1}{16}$  of an Inch in thickness. Found in a Gravel-Pit on the North-side of *Oxendon*, near the Church. Mr. *Morton*. This is a sort of Geodes.

† o. 10. A Stone of a ferruginous Colour. Being broke one part, it appears to be a Crust, inclosing a gritty Stone of a dark Ochre Colour. Both the one, and the other, shew some very small Sparks of a shining Talky Matter. This Body is very ponderous: and seems to contain more Iron than any of the foregoing. Found on the Sea-shores near *Burlington, Yorkshires*. This is referable, if to any of these, to the Bezoar-mineral. But this Body is not ordinarily so stoney and hard.

† o. 11. A Geodes, of a ferruginous Colour, with several Cavities, having in each an Ochreous Dust. 'Tis broke, and in two of the Caverns are several small Cylinders, passing most of them across from side to side. There's one larger than the rest, being  $\frac{3}{4}$  of an Inch diameter. Found in a Stone-pit at the West-end of *Desborow, Northamptonshire*. Mr. *Morton*.

† o. 12. A Geodes, of the Bigness and Figure of a Pullet's Egg, only it is somewhat compress'd. 'Tis outwardly of a grey Colour. Being split in two, there appears in the middle an oval Nucleus, of the bigness of a Chestnut, of a light brown Colour, friable, and not unlike an Ochre. This is enveloped with a ferruginous Case, about one tenth of an Inch thick: and that with another, paler, and about three times as thick. Found near *Wiggan in Lancashire*.

† o. 13. A Geodes of an oblong Figure: and square, only a little flat. Outwardly it is of a dark brown ferruginous Complexion; and hard. In the middle is a Nucleus, grey, with a Cast of yellow; and softer. Sir *George Wheeler*. This is about two Inches in length. Found in a Gravel-pit near *Durham*, in which this sort is pretty frequent.

† o. 14. Another of an irregular and compress'd Figure; otherwise little different from the foregoing. Sir *George Wheeler*. From the same Pit.

† o. 15. Another, of an oval Figure, but flat or compress'd: and its out-side of a dark ferruginous Colour. It is composed of five or six thin Crusts; and betwixt each is a very thin Plate of an Ochreous Matter, which on one side of the Body is of a red, on the other of a yellow Colour. Within all, in the middle of the Body, is a yellowish Ochreous Matter, more soft and friable than in any of the foregoing. From still the same Pit. Sir *George Wheeler*. Indeed, the central Ochreous Matter hardens as it dries: and was much softer when first taken out of the Earth.

† o. 16. Another, broke: scarcely different in any thing from that † o. 13. Found upon the Shores of the River *Tyne*, near *Newcastle*.

† o. 17. Another Geodes, of an oblong Shape, about an Inch in length. It is composed of only one single Crust, about  $\frac{1}{10}$  of an Inch in thickness. This is of a very dusky red Colour: only the outside is of a brighter red. It is fill'd within with an Ochreous Dust, of a light brown Colour. Found in the great Iron-Mine at *Langron, Cumberland*.

† o. 18. Another, of the bigness of a Walnut, of a very pale brown Colour, broken to shew the interior Constitution of it. 'Tis composed of one single Crust, having a dusty Matter within, of a darker Colour than that of the Crust. Out of a Brick-Clay-pit near *Tatnam Court*. They are very common in the Clay-pits all about this City; but the Brick-makers pick them out of the Clay; because, when they come to be heated in the Kiln, the Air, in the Cavity within, becoming rarefy'd, and expanding, breaks the Shell, and bursts and spoils any Brick that it may happen to be inclosed in. They call it *Race* or *Rance*.

† o. 19. A Bezoar-mineral, of a Constitution harder than usual. 'Tis of a flattish Figure: and composed of several Crusts, each about  $\frac{1}{8}$  of an Inch in thickness. The outermost is of a red Colour: the next of a yellow: and so on alternately red and yellow to the Umbilicus of the Body. *Harwich-Cliff*.

† o. 20. Part of a Bezoar-mineral, of a triangular Form, composed of Crusts alternately brown and white. Found in a Tile-Clay-pit, along with the *Lodus Helmontij*, x. d. 25. on the top of *Shooters-Hill, Kent*.

† o. 21. Part of a Geodes, that was, when entire, about the bigness of a Man's Fist. 'Tis externally covered over with a ferruginous Crust, about  $\frac{1}{4}$  of an Inch thick. This was fill'd chiefly with a gross Sand, amongst which was a yellow Ochreous Matter. Out of a Gravel-pit on *Hamstead-Hearsh*, where there were several of the same sort.

† o. 22. A Nodule of Race, of the same sort with that † o. 18. From a Brick-Clay-pit in the Fields, on the West-side of *Hyde-Park*.

† o. 23. Another, oblong, and carrying the Appearance of a white Coral. From the same Clay-pit. Indeed, these Bodies are all tuberos, and unequal: and some have short Stems, branch'd, and not unlike Coral. I examin'd a great Heap of them that were pick'd out of the Clay by the Workmen: They were of several Sizes, from the bigness of a Pea, to that of a Hen's Egg. When the Clay is wash'd off, they are all of near the same Colour, which is a light Ash-Colour. Breaking several of them, I generally found a kind of clayey Matter in them, sometimes of a brisk, and sometimes of a dusky red Colour. After they have been long exposed, and thoroughly dry'd, this Clay comes into Form of a Dust or Powder, as 'twas in † o. 18. *supra*. Some few  
there

there were amongst those I broke, that, like this, had no Cavity, or clayey Matter in them.

† o. 24. Another, from a Brick-Clay-pit in a Field, on the North-side of *Soho-Square*.

#### MANTISSA I.

*Natural Delineations, of Shrubs, upon the Surfaces of various Fossils, chiefly in black, but sometimes in brown, made by Mineral Steams.*

#### DENDRITÆ S.

*Inscriptæ Fossilibus Arborescentium Delineationes, ab Halituum Mineralium Ascensu factæ.*

p. 1. A Piece of grey Slate, with a greenish Cast. On the middle of it stand Delineations of Shrubs, in a Row, done in black. Above and below are lesser Delineations, of the same Colour, resembling Moss; all finely exhibited. *Mr. Fitz-Roberts. From the great Slate-Quarries near Newlands, Cumberland.*

p. 2. A Piece of pale brown Stone, with a Row of Shrubs on it, in black, and upon a black Ground. *King's Weston.*

p. 2 \*. Delineations of Moss, or Shrubs, black, on a whitish Stone: got in a vast Quarry in *Sella-Park, Cumberland*. All the Stone of this Quarry exhibits these Delineations wherever it parts in breaking.

p. 3. A grey Flinty Pebble, with various Delineations on the Inside of it. Found by the Road in a Gravel-pit beyond *Deptford*, on the Brow of the Hill entring on *Black-Heath*.

p. 4. Another, with like Delineations. *Shooters-Hill.*

p. 5. Another. *Clapham-Common, Surrey.*

p. 6. Another, white, with 3 or 4 Shrubs, of a deep brown, on the Surface of it. *Greenwich-Park, Kent.*

p. 7. The Shell of a Bivalve, struck out of a grey Stone, with Delineations of Shrubs very fair upon it. *Stifford, Essex.*

p. 8. Another, with like Delineations; from the same Place.

p. 9. A Piece of Stone, with part of the Spike of an *Echinus Marinus*, and several Fragments of Sea-shells inclos'd in it, with like Delineations upon them. From a Quarry near *Sir Ralph Dutton's House. Sherborn, Gloucestershire*. The Delineations, when brought forth to the Air, in Tract of Time fade, and decay.

p. 10. & 11. Two others, from the same Quarry, with like Fragments of Shells and Delineations upon them.

p. 12. & 13. Two pieces, of a very hard grey Flint, that were originally one, joining with a kind of natural Seam, at which they divided and parted. The Surfaces that were contiguous, have several very fair and large Delineations of Shrubs upon them. Those on the Surface of the one Piece are of the same Form, and Bigness, and stand at the same Distance, that those do on the Surface of the other. Found by *Guildford in Surrey*, whence they

they were sent to *Rome*, and presented to *S. Ag. Scilla*, who sent them back to me.

## MANTISSA II.

### *Scoria, Slags, and Vitifications of Metals.*

q. 1. A glassy Body, with Veins, or rather Crusts, of green straw-colour, and pellucid, included one in another, exactly in manner of some Agats.

q. 2. Another, of a very deep green approaching black.

q. 3. Another, black. From the Lead-smelting-Works, near *Worksworth* in the *Peak*.

q. 4. Another, black. From the Lead-Works at *Chuton*, on *Mendip*, *Somersetshire*.

q. 5. Another, likewise black. From the Tin-works at ---- in *Cornwall*.

q. 6. A piece of coarse brown Slag, seeming to be of Copper. There are great Heaps of this found on a Tenement call'd *Stone*, lying two Miles South-East of *Chumleigh*, *Devonshire*, near the Ruins of a Building; which, according to the Tradition there, was a Palace of a *Saxon* King. There's now no Mine or Forge near. I am not positive, that this, and the two following, are certainly Slags. Though they have much the Aspect of Slags, they may possibly have been natural Nodules; which I the rather note, because there are no Forges near any of the Places where these three are found.

q. 7. Another, of a dusky Colour, near black. There are of these frequently plowed up in the Fields of *Weldon*, *Northamptonshire*. *Mr. Morton*.

q. 8. Another, little different. Found amongst others very plentifully in plowing in the Fields near *Dean*, *Northamptonshire*. *Mr. Morton*.

q. 9. A flaggy Scoria taken off the Surface of the Lead, smelted out of *Caudbeck-Ore*, *Cumberland*. I never saw the like in other Lead-Works: but 'tis constant here. Observing it to be very ponderous, I suspected there was Metal in it: and making trial, I got a considerable Proportion of Lead out of a Piece of this sort.

q. 10. A Slag, taken out of the bottom of the Hearth of the Lead-smelting-Works at *Newlands*, *Cumberland*. They use there the Copper-Slags, that remain of the *Hochstetters*-Works, as a Flux to promote the Fusion of their Lead-Ore.

q. 11. A Copper-Slag, from the Remains of the *Hochstetters*-Works, near *Keswick*, *Cumberland*.

q. 12. Melted-Iron, from the Works at *Cleter* near *Langron* in *Cumberland*. The Undertakers pretended they run it with Sea-Coal; but, upon breaking this Piece, and some others, in which I found Pieces of Charcoal, I discover'd their Deceit.



q. 13. A *Regulus*, run out of black Lead, of the finest sort, powder'd, without any Flux.

## MANTISSA III.

*Miscellany Instances of metallic and mineral Bodies that have been wrought; and that give some light to natural History.*

## EXTRACT.

1. No Growth of Metals in Ore exposed to the Air.  
Nor in Ore long since cast aside in the Mines under Ground.  
Nor in the Slags remaining of ancient Works.
2. Of Dr. *Meara's* mistaking Quicklime for a native Mineral, and imagining it to be the Cause of the Heat of the Baths of *Bath*.
3. Blue Vitriol found adhering to the bottom of a Furnace that had serv'd for calcining Copper Marcasites.
4. A Crystallization of Allum.
5. Litharge.
6. Pitch out of the *Shropshire* Pitch-stone.
7. An Oil out of that Pitch resembling *Petroleum*.

## MANTISSA III.

*Miscellanea, Historiam Metallorum & Mineralium quorundam, arte elaboratorum, spectantia.*

r. 1. Three Masses of the dress'd Copper-Ore that was left in the Field unmelted, by the *Germans, Hochstetters*, when they desisted and quitted the Works of *Goldscalp*, about the Year 1630. There are several Heaps of these; and some very large. The Ore was broken and reduced small; but having lain exposed to the Air and Rain, the Salts in the Marcasites liquating, clotted and united the broken Ore in this manner into one Mass. These were Parts broke off the outides of the Heaps; the interior Parts are harder and more firmly combined; they are likewise richer, and have more Copper in them; the Salts having dissolv'd a great deal of the Metal; which, partly by reason of its Gravity, and partly because of the smallness of its Parts, made its Way along with the Water that fell in Rain, to a greater depth in the Heap. Such a Removal of the Metal out of one part of the Mass, and collecting of it in another, is what has mis-led some Writers, and given umbrage to an Opinion, that there is a growth of Metal in Ore exposed to the Air. But tho' this Ore happens thus to clott and combine, some sorts there are, both of Copper, Lead, and Tin, that lie in Clay, Shiver, and lax Spar, that the Weather loosens, and opens the parts of, after they have been long exposed to it. So that in these, the Ore that before could not be parted in washing, is, by this Means, in tract of Time, brought to such State as to render it separable; and is frequently after some time wash'd and smelted to Profit. Another Accident there is, that has given



as much ground to this Error, of the Production and Encrease of Metals, while expos'd to the Air, as either of the former. This is, those who wrought the Veins anciently, when they were numerous, full, and the Ore rich, neglected and cast aside the poorer Ore. And this being work'd at this day to considerable advantage, has made some imagine, the Ore has grown since 'twas so cast aside. Nay, there have been those who have fancied a growth of Metal, even in the Slags that are Remains of the ancient Works; because we now run them again to Profit. But, such was the unskilfulness and carelessness of the Smelters of those Times, they frequently left a considerable share of Metal behind in their Slags. They seem to have made their Fires not sufficiently strong and intense; so that few of their Slags are found vitrify'd. And the laxer Slags yield to the Weather, moulder, and fall to pieces; after which, the Metal may be separated from the Refuse, by washing, and so melted down.

r. 2. Lime, very white, that I collected on *Lansdown* near *Bath*. 'Twas scatter'd out of the Carriages that convey'd it to the neighbouring plough'd Lands for their Manure. I search'd thereabouts very carefully, but could find nothing else of like sort: So that there cannot well be any doubt but that this was what *Dr. Meara* call'd *a kind of Chalk as white as Snow*, which being tasted, was attended with a *biting and heat in the Mouth*, and being put into cold Water, rais'd an *Ebullition and Heat like Quick-Lime*. So that he took it to be the cause of the *Heat of the Water of the Baths*; and thought this a *noble Discovery* \*. This is certain, Lime is, and has been long used for Manure of the Fields thereabouts; and 'tis frequently found dropt out of the Carriages all about *Lansdown*, the very place where his *white Chalk* was found †: And his Description squares so exactly to Lime, that 'tis strange he should not know this Body was apparently nothing else. It seems, that which he saw, happened to be fresh, and gather'd before any Rain had fallen to slake it. 'Tis not well, that Gentlemen that have not duly inform'd themselves of Things the most obvious and common, should take upon them to write of those that are the most abstruse and difficult. This is what has laid the foundation of Amusements in Natural History, and Errors without end. And they, who would hereafter write well and justly, must be very cautious how far they rely upon a vast number of both Observations and Reasonings, that some of late have set forth to light.

r. 3. Vitriol blue, found adhering to the bottom of a calcining Furnace of the brassy shining Copper-Ore in *Newlands, Cumberland*. 'Tis known, that this sort of Ore has Vitriol in it. The Furnace had been disused for some Months; and probably, the Humidity of the Air, during that Recess, collecting there and form-

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\* See his Letter in *Dr. Childrey's Brit. Bac.* p. 40.

† Ibid. p. 39.

ing Drops, as usual, these falling brought down the Salts that had been before carry'd up by the Fire to the top of the Furnace, affix'd and crystalliz'd them there. There was about a Pound of this Vitriol; and all of it finely shot and crystalliz'd: but this has been broke and injured by Carriage. The blue Tincture was owing to Copper concreting with the Vitriol.

r. 4. A quadrangular Shoot of Allum terminating in a Point, found with several other like Shoots adhering to a side of the Vessel, in which the aluminous Liquor was set to cool after boiling, at a Crack, thorough which a small quantity of the Liquor leak'd forth. *Peak, near Hacknesh, Yorkshire.*

r. 5. Litharge.

r. 6. Pitch from *Bental* in *Shropshire*, drawn forth of the *Lapis Piceus* there. *Conf. g. 1 supra.*

r. 7. An Oil drawn forth of the Pitch above-mentioned. r. 6. They there fancy it like Oil of Amber; but in that they are much mistaken. Indeed, it does very much resemble the common black *Petroleum*, in Consistence, Colour, Smell, and all other Respects: and without doubt, the true native *Petroleum*, found floating upon the Water of some Springs, is no other than this very pitchy Substance, drawn forth of the Strata, by the Water, as it passes them in its Course to those Springs. Probably, the subterranean Heat may also contribute something to the liquating and running of it.





A  
CATALOGUE  
OF THE  
*ENGLISH FOSSILS*

In the COLLECTION of

J. WOODWARD M. D.

PART II.

Exhibiting the FOSSILS that are extraneous ;  
the Parts of Vegetables, and of Animals,  
digg'd up out of the Bowels of the Earth ; in  
particular the Shells of Sea-Fishes : as also  
the Stoney, Mineral, and Metallick Bodies  
form'd in them.

Ranged and disposed in a Classfical Method, according  
to their several Kinds and Alliances ; with an Histo-  
rical Account of each : as likewise various Observa-  
tions, and Reflections.





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## PREFACE to the Whole.

**I**T may not be improper or unseasonable, before I proceed to the brief Account I am going to give of the Bodies in the following Catalogue, to take notice that I began my Observations and Collections in Gloucestershire; whither I was invited by Sir Ralph Dutton, along with his Lady's Father Dr. Barwick, under whose Tuition I then was, very happily, he being a Man of great Sagacity, Learning, and an Encourager of all ingenious Studies. Here I had very generously allow'd me all Conveniencies and Assistances, for the furthering of comparative Anatomy, in which I took great pains; and had all the several sorts of Brutes, of Birds, of Fishes, that this noble and plentiful Country afforded, readily brought to me for Dissection. I had here likewise, opportunity of carrying on my Botanic Studies, of which being then young, I was very fond, having the honour of an acquaintance with Sir George Wheeler, Dr. Plukenet, Mr. Doody, and some other Gentlemen, very famous for the Progress they had made in those Studies. Not that I confin'd my self so much to this part of Natural History, as not to be ready, forward, and desirous to look into any other; and the Country about Sherborne, where Sir Ralph Dutton's Seat was, and the neighbouring parts of Gloucestershire, to which I made frequent Excursions, abounding with Stone, and there being Quarries of this laid open almost every where, I began to visit these, in order to inform myself of the nature, the situation, and the condition of the Stone. In making these Observations, I soon found there was incorporated with the Sand of most of the Stone thereabouts, great plenty and variety of Sea-shells, with other marine Productions. I took notice of the like, lying loose in the Fields, on the plough'd Lands and on the Hills, even to the very top of the highest thereabouts. Nay, in many places of this Country, they lay exposed on the plough'd Lands so thick, that I have scarcely observed Pebles or Flints more frequent and numerous on the plough'd Lands of those Countries that most abound with them. This was a Speculation new to me; and what I judg'd of so great moment, that I resolv'd to pursue it thorough the other remoter parts of the Kingdom; which I afterwards did, made Observations upon all sorts of Fossils, collected such as I thought remarkable, and sent them up to London. Some others were afterwards given me by such curious and intelligent Persons, as being appriz'd of the usefulness of these Studies, turn'd their Thoughts to such Searches. Of which the chief were Mr. Stone-Street, and Mr. Morton, two Men of great Learning; and the latter deservedly famous for his Natural History of Northamptonshire.

The Subjects treated of in this Catalogue, the marine, and other extraneous Bodies turn'd out of the Earth.

The Method in which they are ranged.

As method is the Life of all Business and Studies, my first care was, that the Things exhibited in this Catalogue should be digested, as far as might well be, into their proper Classes, according to their mutual Affinities and Relations to each other. That was not indeed so practicable in the Vegetables, because there were commonly Leaves of Plants of several kinds in the same Mass of Stone. But for the parts of Animals, particularly the Sea-shells, which are very numerous and various, I hope the method I have disposed them into, will not be thought greatly amiss.

The Places where they were found.

Countries where

Of the Observations.

As to the Places where each was found, tho' they be generally noted, it is in most very briefly; and the particular Pit, Quarry, or Field, whence each was taken, are not always so distinctly set forth as I could wish. The reason is, most of them were collected in Countries where I was a stranger; and so not always appriz'd of the names of the Grounds and Tracts of Land, where I took them up. Besides, in a Journey, and travelling, I could not well allow myself to descend to more Particulars in this matter; reserving the time I had to spare, for what I thought of much greater moment, I mean, noting the Condition of the Earth, and of the Strata, not only in the places where these Bodies were found, but all others, where the Intrails of the Earth happened to be, by any means, display'd and laid open to view. For 'twas from these Observations, that I have advanc'd what I have since publish'd, concerning the means by which these Bodies were brought to Land, the great Changes the Earth then underwent, the Rise of the Mountains, the Origin of Springs and Rivers, and the Formation of Metals and Minerals, with several others of not less importance.

A Collation of these fossil Bodies, with the marine; and with like Fossils found elsewhere.

For those Bodies in this Catalogue that are described or grav'd in Books already printed, I propose, so soon as I shall find leisure, to refer to the Places, as well of the Authors who have wrote of the living Shell-fish, Aristotle, Pliny, and the Ancients; as Rondeletius, Dr. Lister, and others of the Moderns; as of those Authors that have set forth Museums, the Writers of Fossils, the Natural Histories of particular Countries, and others who have described or grav'd those that have been digged up out of the Earth. If I am not so fortunate as to find Opportunity for this myself, those  
into

into whose hands these Things shall hereafter fall, may well supply this defect; it being a thing not difficult for any one, who is Master of those Authors, and vers'd in this part of Natural History, to make those Additions, and compleat this Work.

There is another thing that may easily be supply'd; which is, making Remarks upon several Things very well worth Consideration, that yet are obvious and discernible at first view, in many of the Bodies exhibited in this Catalogue. 'Twould have been a great pleasure to me to have done this myself, could I have spar'd the Time from my Business, and other more needful Studies.

One thing I think may be asserted with great certainty, that the Bodies here set forth give even ocular Demonstration, besides the Proofs from Experiments, that those of them that appear to be of marine Origin, are really so: that they differ in nothing from those found now at Sea: and exhibit in themselves plain Marks that they were all originally brought thence.

Then there are various Phenomena, exhibited by them, that as plainly shew, that when they were so brought forth at the Deluge, the Earth was destroyed, all the Solids of it, Metals, Minerals, Stone, and the rest, dissolv'd, taken up into the Water, and there sustain'd along with the Sea-Shells, and other extraneous Bodies: till, at length, all settled down again, and form'd the Strata of the present Earth. The Shells, and other extraneous Bodies, being thus lodg'd amongst this stoney, and other mineral Matter, that afterwards became solid, when this comes now to be broke up, it exhibits Impressions of the Shells, and other Bodies lodg'd in it; showing, even the hardest of it, to have been once in a State of Solution, soft, and susceptible of Impression.

These marine Bodies are thus found to the tops of the highest Mountains, to the bottoms of the deepest Mines: and this, as appears from the Catalogues of the foreign Fossils, with the Observations which I have caused to be made abroad, on all sides of the Globe; which shews the Dissolution to have been universal.

Other Phenomena there are of these extraneous Fossils, that prove, that this Havock and Destruction was begun in all Parts at the same Time, carry'd on, and finish'd in the same Manner.

When the Shells, thus lodg'd in the Earth, that happen to have been well preserv'd, come to be broken and examin'd, they are found ordinarily fill'd with metallic and mineral Matter, with

Remarks upon the Bodies in this Catalogue.

Some of the Uses of this Collection, e. gr. to shew that the Fossil Shells, &c. are really marine.

That when those Shells were thus repositied in the Stone, &c. all was in a State of Solution. Hence the Impressions of Shells in Stone, and other solid native Fossils.

That there has been a total Dissolution of the Earth.

That the whole Globe was dissolv'd all at the same time.

That the Conchitæ and other stoney Bodies



dies resembling Shells, were molded in the Cavities of Shells.

Stone, with Flint, and other, even the most solid Substances; which many Instances in this Catalogue give ocular proof of, and in such manner as to shew these several hard Substances were dissolv'd, and cast in these Shells, as in so many Plafms or Moulds; they resembling the insides of the Shells with as much exactness as Metal, Wax, or any other Matter melted and cast in them, could ever possibly have done.

These afford Evidence of Sense, that tho' the Shells, in which they were formed, be perished since, and gone; this was the true Origin and Method of forming those Bodies, consisting of Stone, of Flint, and the like, that by reason of their resemblance of Conchæ, Cochleæ, Echini, have obtain'd, amongst the Writers of these Things, the names of

Conchitæ, Cochlitæ, and Echinitæ. In such parts of the Water of the Deluge, where there happen'd to be great numbers of Salts, particularly the Vitriolic, sustain'd in the Water along with parts of Trees, and other vegetable Bodies, and with Shells; and the like animal Bodies, the Salts prey'd upon, and by little and little dissolv'd the parts of the said Bodies: and there happening frequently to be, in the same parts of the Water, sustain'd metallic, mineral, flinty, sparry, or other like Matter; this sometimes succeeded, and was deposited in the room of the vegetable and testaceous Matter, in such method as to form metallic, mineral, sparry, and flinty Bodies of like Figure, Bigness, and Texture with the vegetable and animal Bodies so demolished and dissipated. This was transfacted in much the same manner as we see in some Springs of Hungary, and elsewhere, highly impregnated with vitriolic Salts; which dissolve the Body of one Metal, suppose Iron, put into the Spring, and deposite, in lieu of the irony Particles carry'd off, coppery Particles brought with the Water out of the

neighbouring Copper-Mines. This is done in such method that the Mass of Copper, thus compiled, exactly resembles the Mass of Iron so demolish'd. But more plain proofs of such Change, and substituting of one Metal or Mineral for another, we have in several of our chymical Processes, both in the Fire, and by Menstruums; of which I must not be allow'd to enter into the Detail here.

And in chymical Operations.

The Shells, and other Bodies lodg'd at first in Stone, and other solid Strata, are now commonly missing, perish'd, and gone. For where the Water pervading the Pores of those Strata, happens to be saturated with vitriolic Salts, they prey upon the Shells, and dissolve them; and the Water carrying off the dissolv'd Particles along with it, leaves the Space before possess'd by the Shell, now vacant and empty. Such spaces

That some of the Shells that were lodg'd in Stone, are dissolv'd, convey'd away, and the Spaces



Spaces occur frequently in Stone, exactly, in all respects, of the figure and bigness of the Shell so destroy'd and carry'd away; and of this, there are various Instances in this Catalogue. Where the Water happened to carry in it, metallic, mineral, or sparry Particles, it commonly deposits them in the Space deserted by the Shell, ordinarily, 'till it had fill'd it; so that the Bodies thus form'd in those Cavities of metallic, of mineral, or of sparry Matter, must of course be of the Figure and Bigness of the Shell born forth of those Places: and of this, there are numerous Examples in this Catalogue.

Those Gentlemen who formerly made Observations, and Collections of these Things, seeing the Conchitæ, and other Bodies that had been moulded and form'd in the Cavities of Shells, which yet consisted, where the Shell was quite perish'd and gone, intirely of mineral, sparry, or other like Matter: seeing likewise Bodies, of the Bigness and Form of Shells, that yet consisted also of like Matter: and having not inform'd themselves of the manner how these were produc'd, it much perplex'd the Question concerning the true Origin of them; and render'd it somewhat intricate and difficult. Inasmuch, that they who had happen'd to make their Observations where rarely any but Bodies of such mineral Constitution appear'd, they were forward to conclude, that all were so, mere Stones, and form'd where they were found, by I know not what Lusus of Nature there. This was particularly the Case of Dr. Lister. When he first wrote, 'tis plain from his own Accounts, he had made very few Observations but on the Bodies found in a Brook by Bugthorp, and a few others not far from the Place where he then dwelt. 'Now, as I suspected, and found afterwards upon Inquiry, the Shells there being generally perish'd, and succeeded by stoney Matter: and he having seen few besides such, and Stones form'd in the Cavities of Shells, since decay'd, being a Man, tho' ingenious, and of some Learning, yet very rash, and precipitate in all his Notions; he immediately pronounced all these Bodies meer Stones, and Productions of the Earth. What was worse, after he had once declared for that Opinion, he was never to be drawn from it. Indeed, Dr. Plot, and others, fell so readily into the same: and it had so universally obtain'd, when I first enter'd upon these Studies, that I found it difficult to prevail with learned Men to credit their Senses, and to see that there were, amongst the rest, Shells that were real: as also, to observe how the mineral Bodies, that resembled them, were form'd by them. Dr. Lister is every where positive that these are Stones, *Lapides sui generis*, and never any Part of an Animal\*: the

they possess'd left vacant.

That these Spaces are frequently now found filled again with sparry, mineral, and metallic Matter; which therefore carries the form of the Shell departed and gone.

That this misled some into the Error that these Bodies are of Mineral Nature, Stones and not really Shells.

\* *Philos. Transact.* N<sup>o</sup>. 77.

Quarries of different Stone yield us quite different Sorts or Species of Shells, not only one from another,—but from any thing in Nature besides that either the Land, salt or fresh Water doth yield us ||: *as if the Stone was the Parent of these Bodies; and they ow'd their Production, one Species to one sort of Stone, and another to another.* Nay, tho' he afterwards met with plain undeniable Shells; and in a Book ‡ that he set forth a while after, has given Icons of several such: though he there expressly asserts, that he found in a black Stone, approaching the Nature of Coal, the very same Species of Shell that he found elsewhere in Iron-Stone \*\*: and that he found another Species in Gravel, which he found also in Stone that yielded Lead, and in the Alum Rocks ††, yet he bravely continued to the last firm and unshaken in his Opinion, that different Stone yields us quite different Species of Shells: and would never be brought, to the very last, to give it up, though by his own Account, it appears to have had no Foundation, unless Coal, and Iron-Stone, were the same thing: or Gravel, Lead-stone, and the Alum-Rock. But this is but one of very many Instances that might be alledg'd of this ingenious Gentleman's Inadvertence and Precipitancy: Which I should scarcely take so particular notice of, but that 'tis a thing so easy to be observ'd in most of the Writers in natural History. The rest of the World do not much regard what they set forth; so that, where they do not fall fowl on one another, their Oversights are neglected. Fill'd with the Satisfaction of their own discerning Faculties, they pass Judgment at first sight; write on, and are above being ever brought to retract it. Nay, 'tis odds but they are rather insulting others: and endeavouring to disettle those Truths that they have establish'd. These are the main Reasons why natural Studies, that are, of all others, of the highest Importance, are in the Confusion and Uncertainty that they are: and it brings into my Mind an Inscription mentioned by Mr. Locke, Natura fecit omnes Judices, paucos Artifices.

The Bodies set forth in this Catalogue, serve as so many Evidences and standing Proofs, as well to detect what is wrong and erroneous, as to assert what is certain and true. Here are, particularly digg'd up, out of the Earth, great numbers of Shells: that differ not in any respect, from those that the Land, salt and fresh Water doth yield us. Then there are, in this Collection, very many Instances of Shells that are of Species and Kinds as different as can be, that yet appear here actually lodg'd, all together, in the same Mass of Stone: as there are others, of the very same Species, lodg'd in Flint, in Chalk, in Stone, of various Kinds, in Sand, in Marle, and other Matter as different as can ever possibly be.

|| Philos. Transct. N<sup>o</sup> 77.  
 Lond. 1680.

‡ Cochlitarum Angliæ Liber. 4<sup>o</sup>  
 \*\* p. 231, 232.

†† p. 250.

I should have been glad my Affairs had allowed me so much Leisure as to have compared all these Fossil-Shells with the marine, that are found at this day both in ours, and other remoter Seas, in order to the forming a Judgment whence each was brought hither. But that is a great Undertaking: and, after all, the Shores of England have not been yet so carefully search'd, but that we now daily find Shells that had escaped the notice of former Naturalists. That also is the Case of most foreign Shores; besides, that there are great numbers there that are never sent over hither: as there are doubtless a much greater number at the remoter bottoms of the main Seas, and the Ocean, that are never brought forth thence to light. That I take to have been the Place of the abode of the Ammonitæ and Conchæ anomia; with a great number of other Kinds, digg'd up here at Land. Not but that I have seen of both those kinds from Sea, but so few that I can take them to be only such as have stray'd and straggl'd from their main residence, and been accidentally intercepted and stranded by great Storms. For, were their residence nearer the Shores, they must needs have been, at this day, obvious and frequent there. For very various Species, of those two kinds, are found in incredibly great numbers at Land, as well in other Parts of Europe, as in this Island: and some of the Ammonitæ are so vastly large, that these would soon be descry'd and found, were there any on the Shores. Those Fossil-Shells, that are not the Production of the main Deep, but such as I have been able to match with others found on the Shores, and are not the Production of our Seas, are all from the West, and of American Extract. I have not yet seen any one that was peculiar only to the East. For there are several found in the Seas of East-India, and in the Mediterranean, that are likewise found in the American Seas. The rest, digg'd up here, are of the English Seas: and before all those, that I was satisfied were such, I have prefix'd the Letter [A] in this Catalogue. Not but that there are several others that I take to have been likewise such, and really the Products of our Seas, to which yet I have not ventur'd to prefix that characteristick Distinction, till I had Leisure to compare them more accurately with those found on our Shores. There are particularly in the 10th Class, both Teeth, and Bones, that I am pretty sure will be found to be of Fish of the English Seas, when they come to be examin'd and compar'd. Others there are that I believe will be found to be of American Origin.

Of the Seas  
whence the  
marine Bo-  
dies, digg'd  
up here, were  
brought.

A CATALOGUE of the Plants in Stone, contained in the  
FIRST CLASSIS.

- A strange Plant, but not intire, or so plain as that the Kind can be distinguish'd. *a.* 104. 105.
- A vegetable Body with undulated Striæ. *a.* 42.
- Leaves of a reticular Texture, not unlike the Skin on the Back of the common Snake. *a.* 4. vid. *a.* 108.
- A Plant not unlike the Sea-Fan. *a.* 41.
- A large Plant jointed like those of the Cane-kind, and striated. *a.* 73.
- Grafs. *a.* 31. 60. 73. 104. 105. 106.
- Cyprus-Grafs. *a.* 19. 20. 23. 24. x. 41. 45. 73. 105.
- English Cyprus-Grafs. *a.* 18.
- Grafs of the Dactylon or Paniceum-kind. *a.* 20. 21, 21\*, 22, 41.
- Typha palustris max.* Park. *Raij Synops.* p. 278. N<sup>o</sup>. 1. *a.* 72.
- The Flag, or Iris. *a.* 60. 61. 64. 65. 68. 69. 70 71. 74. 75. 80. 81. 106.
- Aloe.* *a.* 17. 36. 37. 38. 39. 40.
- Equisetum.* *a.* 24x. \*. 25. 25b. 25c. 30. 53. 78.
- Equisetum palustre brevioribus.* fol. C. B. *Raij Synops.* p. 42. *a.* 26. 26. b.
- Equisetum, sub Aquis repens.* *a.* 73. *a.* 111.
- A Plant, of the Stellated-kind, like the *Asperula.* *a.* 27. x. 28. 29.
- A Leaf, appearing to be of the Fern-kind. *a.* 1. Another Species of this. *a.* 2. 107.
- Fern. *a.* 44. 46. 54. 60. 73.
- Filix mas vulg.* *a.* 27\*. †. O. 55, 56, 57. 58, 59.
- Varietas Filicis maris vulg.* Petiver. *Raij Synops.* p. 341. *a.* 66, 67.
- Filix mas pinnulis angustis non dentatis.* *a.* 5, 60, 61.
- Filix mas non ramosa, pinnulis parvis oblongis non dentatis.* *a.* 102.
- Filix mas non ramosa, pinnulis angustis raris profunde dentatis.* Ger. *Raij. Synops.* p. 48. *a.* 45.
- Filix Fam. vulg.* *a.* 23, 46\*, 47, 49, 50, 51, 52, 53, 101.
- Filix min. palustr.* *Raij.* p. 48. *a.* 27. ††. 29. 31.
- Fern approaching the *Filicula montana* *Ruta muraria facie tenerifolia* *Plucknet* *Fab.* 181. f. 1. *a.* 62.
- Polypody. *a.* 8. 9. 10. 11. 60. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98.
- Seed-bearing Leaves of the *Lonchitis aspera minor.* *a.* 6. 7.
- Osmunda Regalis.* *a.* 16. 24 O. 30. 31. 32. 33. 43x. 78. 79.
- A *Chamæfilix.* *a.* 16.
- Ala of a Capillary-Plant like the *Chamæfilix marina Anglica Parkinsoni.* p. 1143. *a.* 12. 81. 82. 83. 84. 85. 99. 100.
- Leaves of the *Trichomanes.* *Parkinson.* *Raij Synops.* p. 46. *a.* 43\*. 44. 46. conf. *a.* 109.
- Adiantum alb. vulg.* *Taberm. S. Ruta muraria.* C. B. *Raij Synops.* p. 48. *a.* 35.



*Adiantum major coriandri folio* Raij Synops. p. 49. a. 64. 65.

*Dryopteris alba* : Dod. Park. 1135. Raij Synops. p. --- a. 74. 75.

*Filix minor non ramosa*. J. B. *Dryopteris* Ger. *Filix minor palustris repens*. Raij Synops. p. 48. N<sup>o</sup>. 6. Creeping Water-Fern. a. 63.  
103.

*Abies mas vulg.* Raij. p. 287. a. 76. 77.

*An Account of the vegetable Bodies, Rosin, Roots, Wood, Twigs, Leaves and Fruits, mention'd in the 2<sup>d</sup> CLASSIS.*

Roots of a sedgy Water-Grafs. b. 18.

Roots of Fir-Trees. b. 28.

Fir. b. 26. 27. 31. 35. 37.

A resinous Matter that the Moss-Diggers call Frankincense. b. 36.

Oak. b. 30. 38. 39. 40. 41.

Yew. b. 32.

Birch-Tree. b. 21. 22. 23. 24. 25.

A Piece of a Branch of a Tree. b. 20.

Pieces of a Shrub like Hazel. b. 42. 43.

Hazel-Leaves and Twigs. b. 19\*.

Juli of Hazel, Alder, &c. b. 4. 10.

Hazel-Nuts. b. 19\*. 67. 68. 69.

Cones of the Larix. b. 72.

Cones of the Scotch-Pine. b. 70. 71.

A Fruit not unlike an unripe Nutmeg. b. 73.

Wood petrified. b. 45, &c.

### *Vegetables digg'd up out of the Earth.*

Before I drew up the following Account of these, I took along with my own, the Judgment and Opinion of four Persons that have been very conversant with Vegetable Bodies, and are very eminent for their Skill and knowledge in Botany. These were Dr. *Plukenet*, Mr. *Stone-street*, Mr. *Buddle* and Mr. *Doody*; and we carefully view'd and examin'd every individual Body herein mention'd.

### *Vegetables digg'd up out of the Earth.*

#### CLASS I.

#### *Leaves of Plants immers'd in Stone.*

a. 1. The very strange Leaf on the Surface of this Piece of black Slate, appears to be of the Fern-kind, but different from any thing now any where growing upon the Face of the Earth, that we know of. There appear, on the Back of the Leaf, Bodies not unlike the Vesiculæ of some Algæ; but they are flat, and stand as thick as they can well by one another. They are placed in Rows, parted from each other by parallel Sulci; but in such Method, that they



they fall all into a Quincunx Order. On the back-side of the Stone is an Impression of a Leaf of the same Species. This was digg'd up in *Mostyn Coal-Pits, Flintshire*; and sent me by Sir Roger *Mostyn*.

a. 2. Another like Leaf, but of a different Species. The Sulci are larger and deeper, and the Interstices of them greater, than in the former: and the Vesiculæ stand at greater distance. *Mostyn Coal-pits*.

a. 3. From the same Coal-pits.

a. 4. Impresses of several long Bodies, appearing to be Leaves, of a reticular Texture, not unlike that of the Skin on the Back of the common Snake. *Mostyn Coal-pits*.

a. 5. An Impress of part of the Ala of a Male-Fern of the same sort with that a. 60. having the Seed-Vessels also much as that has. There is part of the Leaf of some other differing Fern in the same Stone. From a Coal-pit in *King's-Wood, near Bristol*.

a. 6. & 7. Parts of Leaves, appearing like the Seed-bearing Leaves of the *Lonchitis aspera minor*. *King's-Wood Coal-pits*.

a. 8. A Leaf, seeming to be of the Polypody-kind. Found in the sinking of a Coal-pit in *Prestcott-Parish, near Wiggan in Lancashire*.

a. 9. A Leaf, very little different from the precedent. *Wales. Edward Lhwyd*.

a. 10. & 11. Two Impressions of Leaves of the Polypody-kind: and not much differing from the two foregoing. *Wales. Edward Lhwyd*.

a. 12. Part of the Ala of a Capillary Plant, not unlike the *Chamaeflix marina Anglica Parkinsoni*, p. 1143. only the Leaves of this are not ferrated. *Edward Lhwyd. Wales*.

a. 16. A Leaf of the *Osmunda Regalis*: and several Impressions of Leaves of the same sort. Also, part of an Ala of the *Chamaeflix*-kind. This piece of Stone lay at the depth of 60 Fathom, just above the Bed of Coal, in Mr. *Mountagu's* Coalery at *Benwell*, not far from *Newcastle upon Tyne*.

a. 17. This Stone being split, has on one part the Impression: on the other, the Leaf it self, of some Plant not unlike the Aloe. *This, and the following to a. 73. inclusive, from the Coal-pits at Farrington, between Bath and Wells in Somersetshire*. There is in this Stone either Alum or Vitriol; inasmuch, that, being wetted, the Salts start, and the Stone shivers, and falls to pieces.

a. 18. Leaves, of a carinated Cyprus-Grass, probably *English. Farrington Coal-pits*.

a. 19. Two Leaves of Cyprus-Grass, a narrower, and a broader, different from each other, and from the precedent.

a. 20. Several Leaves of Grass appearing to be both of the Culmiferous and Cyprus-kind. x. And on one part is an Impression of a short broad Leaf, seeming to be of the Dactylon or Paniceum-kind.

a. 21. A broad short Leaf seeming to be of the Gramen Dactylon or Paniceum-kind.

a. 21\*. Another Leaf, of the same sort, with a slip of the Culm of the Grass it grew on, still adhering to it.

a. 22. A broad short-leaved Grass, of the same sort with the two precedent.

a. 23. Narrow and broad-leaved Cyprus-Grass, of the same sort with those N<sup>o</sup> a. 19. Also, an Impression of the *Filix fam. vulg.*

a. 24. x. The Stalk of an Equisetum naked. \* Another, seeming to be of the same sort, beset with several Rounds of Leaves, after the manner of the stellated Plants. These Leaves are short, and narrow at the end that is next the Stalk: but broad and obtuse at the other. The Rounds stand at near half an Inch distance from each other. † A Leaf of Grass of the same sort with that a. 20. x. ○ An Impression of the common *Osmunda Regalis*.

a. 25. An Equisetum. 'Tis of the same sort with a. 24\*.

a. 25. b. Another of the same. The Impression of another.

a. 25. c. The Impression of another. And a naked Stalk of the same sort of Equisetum with that a. 24. x.

a. 26. Seems to be an *Equisetum palustre breviorib. fol. C. B. Raij Synops. p. 42.* But the Leaves of this Fossil-Plant are narrower and sharper pointed.

a. 26. b. An Equisetum of the same sort with the precedent.

a. 27. x. A Plant of the Stellated-kind. There are 5 Roundels on this Stalk. They are placed at somewhat above an Inch interval. In each of these there are about 30 Leaves: and they generally at least an Inch in length. It looks at first view like an Asperula: but the Roundles appear to have grown edge-ways, rather than horizontally like those of the stellar Plants. Where all the Leaves meet at the Center, in each Round is a small circular Nodus. \* An Ala of the *Filix mas vulg.* † Another Male-Fern, with the Pinnulæ more deeply indented. ○. *Filix mas vulg.* †† An Ala, seeming to be of the *Filix min. palustr. Raij. p. 48. N. 6.*

a. 28. A Roundle of the stellar Plant, of the same sort with that a. 27. x.

a. 29. Two Roundles of the same kind of Plant. And an Ala of the *Filix min. palustr. 27.*

a. 30. A Pinnula of the common *Osmunda Regalis*. Two Equiseta, the same with a. 24. x. & \*.

a. 31. A Pinna of the common *Osmunda Regalis*. Two Leaves of the *Filix Palustris minor. a. 27. ††. & a. 29.* and two small Leaves of Grass.

a. 32. A Top-pinna of the common *Osmunda Regalis*, with an Auricle at the Stalk, as usual.

a. 33. Three Pinnæ, seeming to be of an *Osmunda Regalis*.

a. 35. *Adiantum alb. vulg. Taberm. S. Ruta muraria. C. B. Raij Synops. p. 48. N. 1.*

a. 36. Part of a broad flat long Leaf, appearing to be of some Iris, or rather an Aloe; but 'tis striated without. Within little appears

appears besides Stone, of the same sort with that of the Stratum in which it lay. Probably the medullar or interior Part of the Leaf being succulent, lax, and tender, 'twas partly dissipated, and partly was absorb'd and lost in the stoney Matter that insinuated it self into the Leaf.

a. 37. Another thicker.

a. 38. Two Leaves of the same sort with the precedent, contiguous to each other, and seeming to be broke off just at their Rise from the Root.

a. 39. Part of another, with larger Striæ.

a. 40. Part of another, with like large Striæ. This is broader than any of the precedent.

a. 41. Part of a reticulated Plant, not unlike some of the sorts of the Sea-Fans. Also a narrow-leav'd Cyprus Grass, of the same sort with one of those a. 19. And a broad Leaf of Grass of the Dactylon or Paniceum kind, the same with that a. 20 x.

a. 42. Part of a large vegetable Body, with undulated Striæ. At certain Intervals are double Rows of pretty large Studs.

a. 43. x. An Impression of a large Pinna, of the common *Ofmunda Regalis* \*\*\* Three Leaves seeming to be of the Trichomanes. *Park. Raij Synopsis*, p. 46.

a. 44. Six Leaves, appearing like those of the Trichomanes. *Vid. a. 43.* \*\*\*; but these lying parallel, seem rather to have been Alæ of the Leaf of some Fern. Also a Leaf of a Fern, but not so plain that Judgment can distinctly be made of what kind it is.

a. 45. An Ala of the *Filix mas non ramosa pinnulis angustis raris profunde dentatis*. *Ger. Raij Synopsis*. p. 48. N. 5. This Fossil is indeed a Variety of that sort found by Mr. Doodly in several Places near London. Along with it are two Leaves of a narrow Cyprus-Grass.

a. 46. x. An Ala of the *Filix fam. vulg.* very plain. \*\* Two Impressions seeming to be of the same. † An Ala like those a. 44. \*.

a. 47. A large Ala of the *Filix fam. vulg.* This agrees exactly, in all respects, with that \* gathered on Hamstead-Heath, xi. Junij 1700.

a. 49, 50, 51, 52. Alæ of a Fern little different from the *Filix fam. vulg.*

a. 53. Two Alæ of the *Filix fam. vulg. Equisetum*, of the same sort with a. 25. *supra*.

a. 54. A large Ala of a Fern, somewhat different from the *Filix fam. vulg.*

a. 55. An Ala of a Fern, extremely fair and plain: different from the *Filix mas vulg.* in that the Pinnulæ are longer, and more indented. 'Tis of the same sort with a. 27. † *vid. a. 56.* and a. 59. \*.

a. 56, 57. Another Ala of the same sort with the precedent; and its Impression on the Slate that was contiguous and adhering to that piece, on which the Ala is, till broken and parted from it.

a. 58. Several Alæ of the same sort still. ✕ An Ala seeming to be of the *Filix mas Vulg.*

a. 59. x. An Ala of the *Filix mas Vulg.* \* An Ala of the same sort with a. 27†. a. 55, & a. 56.

a. 60. A large Branch of a *Filix mas pinnulis angustis non dentatis*. It has not been yet observed growing in England. There are upon the back of the *Pinnula, Puncta feminalia* in two Rows: in which order the Seed-vessels of the Male-fern grow. On the back of the Stone are a vast miscellany of Ferns of several kinds, Polypody, Grass, Flags, &c. lying in great Confusion; and there's amongst the rest, a Body seeming to be the stalk of a Fern.

a. 61. This, till broken off, join'd to a. 60. and has on it the Impression of the large branch of the Fern above-named. On the back-side of it is a Flag.

a. 62. An Impression of a Branch, of a small Fern, approaching the *Filicula montana Ruta muraria facie tenerifolia. Plukenet. Tab. 181. f. 1.* 'Tis English.

a. 63. An Impression of the *Filix min. non ramosa. J. B. or Dryopteris. Ger. Raij Synops. p. 48. N. 6.*

a. 64. A Branch of a Fern, nearly resembling the *Adiantum major coriandri folio, Raij Synops. p. 49.* several Impresses of Flags.

a. 65. Three Alæ of the same sort with the last: with 2 or 3 Leaves of the Flag-kind.

a. 66. Alæ and Impressions of the *varietas Filicis maris vulg. Petiver. Raij Synops. p. 341.* These have the Seeds on the Backs, near the Edges of the Pinnæ.

a. 67. Another Ala, of the same sort; with the Seeds in like manner.

a. 68. Two or three Leaves broken off just at the Rise from the Root, striated, of the Flag-kind.

a. 69. Part of two Flags, striated, but deeper on one side than the other.

a. 70. Impressions of both the carinated and concave side of some Flag.

a. 71. Two broad Flags, pretty smooth, lying a-cross each other.

a. 72. The *Typha palustris max. Park. Raij Synops. p. 278. N. 1.*

a. 73. An Impression of some large Plant, jointed like those of the Cane-kind, and striated. An English Equisetum, of that sort that is termed *sub Aquis repens*. On the back-side of the Stone is a Miscellany of Fern-Leaves, and Grass, particularly a broad-leaved Cyprus Grass.

a. 74. A piece of Stone, having on it part of the Leaf of an Iris: and a small Fern appearing to be the *Dryopteris alba Dod. Park. 1135. Conf. a. 75.*

a. 75 Another Piece of Stone, broken off from the precedent, having on it Impressions of the Iris and Fern above-mentioned. From the Coal-pits at a little Village called Street, near North-Byerly,



*Eyeriy*, about three Miles from *Market-Bradford*, *Yorkshire*. They have now desisted from working in this Pit; and the Plants are found in none of the others thereabouts.

a. 76. *Abies mas vulg.* Raij p. 287.

a. 77. The Impression of that *Abies*. The two pieces of Stone, on which are this *Abies*, and the Impression, were originally contiguous and united. From the Coal-pits at *Street*, *Yorkshire*.

a. 78. A piece of Stone, having on it several Impressions of Leaves single, seeming to be of the *Osmunda Regalis*. Also one round of the broad-leav'd *Equisetum*, a. 24\*. & a. 25.

a. 79. The piece of Stone that was contiguous and united to the foregoing; with the Leaves of *Osmunda* upon it. From the same Coal-pits.

a. 80. Part of a Flag. From the same Coal-pits.

a. 81. The Impression of a Flag, and of a capillary Plant, not much unlike that a. 12. From the same Coal-pits.

a. 82. A capillary Plant of the same sort with the precedent: and from the same Coal-pits.

a. 83. A piece of a ferruginous stoney Nodule having in it 3 Leaves of a capillary Plant not unlike those of a. 12. but larger. Indeed they somewhat resemble the Leaves of the *Osmunda Regalis*, only that they are shorter. *Kenton* Coal-pits. These Nodules, with Leaves in them, are called *Catheads*, and seem to consist of a sort of Iron-Stone, not unlike that which is found very plentifully at *Robinhood's-Bay* in *Yorkshire*, and in the Rocks near *Whitehaven* in *Cumberland*: where they there call 'em *Cat-Scaups*, and are frequently melted with the softer Iron-Ores. These perhaps differ not much from those described by Dr. *Lister de Font. Med.* by the Name, as I remember, of *Minera ferri pileiformis*, called *Ball-Mine* in *Staffordshire*. These *Catheads* are found only at *Kenton*, which is about two Miles to the Northward of *Newcastle*: and *Newbiggin*, about a Mile to the Westward of *Kenton*. Those of *Kenton* attend the Stratum of Coal; but lie in a Bed of blue Chiver, about a Fathom thick, and have another Stratum of black Chiver of the same thickness lying under them. They are generally about 6 or 7 Fathom from the Coal. Those of *Newbiggin* are but 3 Fathom above the Coal. They have not always Leaves in them; indeed, not above one in five or six. When fresh taken forth, they break difficultly and irregularly; but when exposed a while to the Air, they split easily, and part at the Leaves. They are of several Sizes, from the bigness of a Walnut to that of a Man's Fist. They are found pretty plentifully: and at about the depth of 40 Fathom.

a. 84. A piece of ferruginous stoney Nodule, with several Leaves of the same sort with those of the precedent. *Kenton* Coal-pits.

a. 85. Another piece of the same Stone, and formerly united to it. It has the Impression of the said Leaves upon it. *Kenton* Coal-pits.



a. 86, 87. A Leaf, and Impression, approaching the Polypody Kind, of the same sort with a. 8. on the two divided pieces of a ferruginous Nodule. From *Kenton* Coal-pits.

a. 88, 89. A Leaf and Impression of the same sort of Plant, on the two divided pieces of a like Nodule. From *Newbiggin* Coal-pits.

a. 90, 91. A Leaf and Impression of the same, on the pieces of another like Nodule. From the same Coal-pits.

a. 92, 93. A small Leaf and Impression of the same on the pieces of a like Nodule, but less. From the same Coal-pits.

a. 94, 95. A larger Leaf and Impression of the same, on the formerly contiguous pieces of a like Nodule. From *Kenton* Coal-pits.

a. 96. The top part of a Leaf of the same, but less, on part of a like Nodule. *Kenton* Coal-pits.

a. 97, 98. Five small Leaves of the same, with their Impressions on the piece of the Stone that was contiguous. *Newbiggin* Coal-pits.

a. 99. A small ferruginous stoney Nodule, having on it a Capillary, rather more nearly approaching the *Chama-filix Marina* *Angl.* than a. 12. 'Tis not serrated.

a. 100. A piece of Stone with the Impress of the said Capillary on it. This tallies with the other piece, and was broke off it. These two, 9 & 100, from the same Coal-pits with the foregoing.

a. 101. A Branch of the *Filix fam. vulg.* or some Fern very like it. And an Impression of a Branch with Leaves a little shorter, otherwise not different. From the Coal-pits at *Farrington*, *Somersetshire*.

a. 102. An Impression of a Fern not yet described, but may be fitly called *Filix mas non ramosa, pinnulis parvis oblongis non dentatis*. *Farrington* Coal-pits.

a. 103. An impression of the *Filix minor non ramosa*. *L. B. Dryopteris*. *Ger. Filix minor palustris repens*. *Raij. Synops. p. 48. N. 6.* Creeping Water-Fern. *Farrington* Coal-pits.

a. 104. An Impression of some strange Plant, about 6 Inches in length, tho' not intire; and somewhat above  $\frac{3}{4}$  of an Inch broad. 'Tis not so plain, as that one may distinctly make Judgment of it. There are with it a mighty Miscellany of other Leaves, chiefly of Grass, lying in a confused and disorderly manner in the Stone. *Farrington* Coal-pits.

a. 105. An Impression of part of a Plant of the same sort with the precedent. There are also several sorts of Grasses both of the *Cyprus* and *Culmiferous* Kinds, some with broader, others with narrower Leaves. *Farrington* Coal-pits.

a. 106. A very thin Leaf striated, and long like a Flag, with a Leaf of Grass lying a-cross underneath it. *Farrington* Coal-pits.

a. 107. A broad flat Body sulcated with 5 *Sulci*, at  $\frac{3}{4}$  of an Inch distance from each other. 'Tis not much unlike a. 2. *Farrington* Coal-pits.

a. 108.

a. 108. A Piece of a black slaty Stone, out of the *Canal* Coal-pits near *Haigh, Lancashire*. The Colliers there call it *black Bast*. The Colliers about *Durham*, and *New-Castle*, call this sort *Plate*. The Stratum of this is about a Yard thick, lies 120 Foot deep, and 30 Foot above the Canal-Coal. There is upon this Slate an Impression of a Body that hath its Surface reticulated in a Quincunx Manner, and much like what might be made by the Bark of the Branches of the common Fir, after the Leaves are fallen or stript off; that having little Flakes standing in that manner.

a. 109. A Branch of some Capillary Plant, something resembling the common Trichomanes, only the Pinnæ are larger, in a dusky grey slaty Stone, which the Workmen call *White Earth*. Found 70 Foot deep, in sinking a *Canal* Coal-pit, near *Haigh, in Lancashire*.

a. 110. A Branch of a Capillary Plant, of a different Species, having the Pinnæ narrower, and dentated, lodg'd in the same sort of Stone: and found in the same Stratum with the former.

a. 111. An Impression of some Species of Equisetum, upon like Stone, seeming to be of the *Equisetum sub aqua repens*. Out of the same Stratum. This sort of Equisetum is found here pretty commonly. I have seen Parts of it to three or four Inches in length.

a. 112. Two Leaves, of the Fern-kind, very fair, each of a different Species, on a blackish grey Slate. From *Swansey* Coal-pits. *Glamorganshire*.

a. 113. Part of a flat Body, oblong, thinning somewhat towards the Edges, near 5 Inches in length, 2 in breadth, and  $\frac{1}{8}$  of an Inch in thickness. The 2 Surfaces are cover'd over with a Quincunx Work, the Panes of which rise gradually towards the middle; where there is a little oblong Dimple in each. Out of the *Canal* Coal-pits at *Haigh, Lancashire*.

a. 114. Impressions of long, flat, striated Leaves; having Appearances of Joints at certain Intervals; upon a dark grey slaty Stone. The Stratum of this lay at the depth of about 25 Fathom, in *Bransly-Cliff*, by the Duke of *Somerset's* Salt-Pans, near *Whitehaven*. The Stratum was one Foot and  $\frac{1}{2}$  thick: and, upon the breaking the Stone, Leaves of Plants appear'd very thick in all Parts of it, where the Grain of the Stone was thus fine and dense. But where it happened to be more gritty, coarse, and lax, there was not one Leaf to be met with. *All the following to a. 138. inclusive* were taken out of the same Stratum. 'Tis observable, that those in this, and the following Pieces of Slate, to a. 117. appear to be of the same kind with those a. 36. & seqq. which were found in a Coal-pit near *Farrington*, in *Somersetshire*. And indeed, there were found 3 or 4 other kinds of Plants here, that were also found there.

a. 115. a. 116. a. 117. a. 118. a. 119.

a. 120. A Body, appearing to be like the Kernel of some Plant. Also the Ala of a Leaf of the Fern-kind.

a. 121. Another Ala.

a.

- a.* 122. Part of another.  
*a.* 123. Part of another.  
*a.* 124. Part of another.  
*a.* 125. A single Leaf of another, very large.  
*a.* 126. Single Leaves of the same Species of several Sizes; also an *Equisetum* appearing to be of the same Kind with that *a.* 26. *supra.* which was found in *Farrington* Coal-pits.  
*a.* 127. *a.* 128. *a.* 129. *a.* 130. *a.* 131. *a.* 132. *a.* 38.  
*a.* 134. *a.* 135. *a.* 136.  
*a.* 137. A long, flat, narrow Leaf, not unlike that of a Reed, or Grass; but having Joints at about an Inch distance from each other.  
*a.* 138.

## CLASS II.

### PARS I.

*Marsh, or Turf-Earth, having lodged in it Nuts, Twigs of Trees, and Shrubs, Grass, Sedge, &c.*

- b.* 1. From *Godalming* in *Surrey*.  
*b.* 2. Found in sinking a wet Dock at *Deptsford. vid. b.* 39. & *b.* 68.  
*b.* 3. From *Hamstead-Heath*.  
*b.* 4. From *Wilmeslow* near *Knutford, Cheshire*. This sort lies uppermost in the Moss, and next the Surface. It seems to be made up only of the Shives or Husks, and other parts of *Fuli*, of *Hazel*, *Alder*, *Poplar*, &c. *vid. b.* 10. *infra*. The *Fuli* are in being only in the Spring Season. There are quantities of this sort of Turf in the North parts of *Yorkshire*, and in the Bishoprick of *Durham*. It lies ever at the Surface above all. 'Tis seldom above a Foot in thickness; but extended frequently for 2 or 3 Miles together. 'Tis found chiefly on the flats of Mountains.  
*b.* 5, & 6. From the same place. This sort lies under the former: and there are Trees lodg'd and bury'd in it. At the bottom of *Wilmeslow-Marsh*, they meet with a reddish Sand.  
*b.* 7. Dug up on the Shore near *Outhorn, Yorkshires*.  
*b.* 7\*. Peat, the softer sort, within a Foot of the Surface. *Arkendale*.  
*b.* 7†. Peat, the firmer sort, lying a Foot deeper than the precedent.  
*b.* 8. Fell-Moss. From *Kendal, Westmorland*.  
*b.* 9. Moss Earth. From *Kendal*.  
*b.* 10. From *Kendal* also. This seems to be the chaffy parts of *Fuli*, of *Alder*, &c. *vid. b.* 4. *supra*.  
*b.* 11. From the Marshes in *Windsor-Forest*.  
*b.* 12. From the Marshes in *Windsor-Forest*.  
*b.* 13. From the Marshes in *Windsor-Forest*.  
*b.* 14. From the Marshes in *Windsor-Forest*.  
*b.* 15. From the Marshes in *Windsor-Forest*.  
*b.* 16. From the Marshes in *Windsor-Forest*.  
*b.* 17. From the Marshes in *Windsor-Forest*.

b. 18. Roots of a fedy Water-Grass. From the Marshes in *Windsor-Forest*.

b. 19. From the Marshes in *Windsor-Forest*.

b. 19\*. Earth with Nuts, Twigs, and Leaves of *Hazel*. Dug up in the *Isle of Wight*. The *Hazel* Leaves were apparent and distinguishable when the Earth was first dug up and moist; but since they were opened and exposed to the Air, they are perish'd, and now hardly discernible. *vid. b. 69.*

b. 19†. Peat-Earth, with numerous Roots, Culms, and vegetable Bodies in it. From a Moor near *St. Anns, Cornwall*. The common Turf of all the Moors, which are very frequent in *Cornwall*, is of this sort.

b. 19x. Peat-Earth very fine, seeming to be composed almost intirely of flakes and parts of rotten Wood. Found in the same Marsh with b. 44†. a Mile from *Langron*.

## CLASS II.

### PARS II.

*Parts of Trees and Shrubs found bury'd under Ground.*

b. 20. Part of the Branch of a Tree found bury'd with b. 3. *Hamstead-Heath*.

b. 21, 22, 23, 24, 25. Pieces of Branches of a Birch Tree found in the Peat-Mosses, in *Windsor-Forest*, with b. 11, &c.

b. 26. Firr. From ---- Marshes in *Cumberland*. Dr. *Nicholson* Lord Bishop of *Carlisle*.

b. 27. A piece Firr-wood dug up in *Brigsteer-Moss* near *Kendal, Westmorland*.

b. 28. A piece of the Root of a Fir-Tree, dug up also in *Brigsteer-Marshes*.

b. 29. From the Shores at *Outhorn*, dug up with b. 7.

b. 30. Oak which is the common Moss-wood at *Wilmeslow*; found with b. 5.

b. 31. Firr, from the same Mosses at *Wilmeslow*.

b. 32. Yew, from the same Mosses.

b. 33. Also from *Wilmeslow* Mosses.

b. 34. From the same Marshes.

b. 34\*. Still from the same Mosses.

b. 35. A Piece of Wood appearing to be Firr. Part of it is burnt, or charr'd. From *Wilmeslow* Mosses likewise.

b. 36. A resinous Matter found lying between the Bark and the Wood of some of the Trees dug up in *Wilmeslow* Mosses. They call it there Frankincense. [*Resinam mittit candidam, Mastichi similem vel Thuri. Th. Barthol. Hist. 72. Cant. 5. ex Stelluto de Ligno Fossili Umbria.*]

b. 37. A Piece of Firr, from the Mosses near *Wiggan, Lancashire*.

b. 38. Oak, from the same Mosses.

b. 39. Oak, dug up at *Deptsford*, with b. 2. & b. 68.

b. 40. & 41. From the same Place; where were found large and entire Oak-Trees, and some other sorts of Trees likewise.



*b. 42. & 43.* Two Pieces of a Shrub, seeming to be Hazel, dug up, with the Nuts, *b. 19\**, in the *Isle of Wight*.

*b. 44.* From the Mosses of ----- in *Lincolnshire*.

*b. 44\**. Wood, very rotten, and friable, found in pretty large Pieces lodg'd in the Stone of a Quarry at *Marsham* near *Abington*.

*b. 44†*. Wood, light, and rotten; out of a Stratum of Bituminous Earth, about a Mile from *Langron* in *Cumberland*. The Stratum in which this Wood was lodg'd was about 3 Foot thick, and lay under a Stratum of Rubble that was 10 Foot thick. There were in the said Stratum Parts of the Trunks of Trees, Leaves, Sprays of Shrubs, and other Vegetable Substances in such Quantity, that the far greater Part of the Stratum seemed to be compiled of them.

*b. 44\**. A Piece of Firr-Wood from the Peat Marsh of *Scaleby*, about 4 Miles from *Carlisle*.

*b. 44++*. Two Pieces of Wood, much impaired and decayed, with some small Quantity of a black Bituminous Matter insinuated into them dug out along with the Hazel-Nuts, *b. 69.* in the *Isle of Wight*.

*b. 44‡*. A Piece of Wood having manifest Marks of its having been charr'd, or burnt by Fire before it was bury'd in the Earth. Dug up with the precedent. 'Tis not unusual to meet with Wood thus burnt, repositied in the Bowels of the Earth. I have found it also in the Peat-Marshes of *Cheshire*, and elsewhere. And *G. F. de Oviedo* observed charr'd Wood in Virgin-Earth, *i. e.* Earth that had never been dig'd in or disturbed, at considerable Depth in the Gold-Mines of *Peru*. Vid. *Purchas Pilgrims. l. 5. c. 3. p. 971. c.*

## CLASSIS II.

### PARS III.

### PREFACE.

This sort of Wood is found most commonly in Strata of Gravel or Sand: and sometimes in Stone, Clay or Marl. All that I have ever observed of it was alter'd and increased in Hardness and Weight, either by Insinuation of stoney and mineral Matter during the Time that these and other Bodies were sustained among the dissolved stoney and mineral Matter, in the Water of the Deluge; or by a total Solution of the Vegetable Substance, and a Succession of stoney Mineral or Metallic in its stead. What hath been imagin'd by some, that this Alteration was made since, by petrifying Water, is without Reason, or any good Observation to countenance it. Even that which is found in Lakes, and in Rivulets, was originally lodged in the Earth at the bottom of them, and petrified before 'twas repositied there. In particular, a more accurate Enquiry, and Tryals, have shewn that what was formerly pretended of the petrifying Power of Lake Oneagh in Ireland, is not true: and the Water makes no such alteration upon any Wood that is put into it; the petrified Wood that is brought thence, being of that which was originally lodged in the Earth at the bottom of the Lake. Instance in the Wood brought out of this Lake, because it



is frequently insisted upon: and more Notice has been taken of it than of any other. As to the stoney Incrustation of Wood, and other Bodies, I give an Account of them in the former Part of this Catalogue, p. ---

### Wood Petrified.

- b. 45. Found in a Gravel-pit, near *Aspley*, *Bedfordshire*.  
 b. 46. From the Bank of *Rush-ton-Brook*, *Northamptonshire*.  
 b. 47. From *Aspley*, in *Northamptonshire*. This has Veins of white Spar in it.  
 b. 48. From *Clipston-Quarry*, *Northamptonshire*.  
 b. 49. From the Shores near *Harwich*.  
 b. 50. Dug up in Mr. *Malcolm's* Yard, at *Southrey*, in *Norfolk*. It lay about two Foot deep in a brown sandy and gravelly Soil.  
 b. 51. From - - - - - *Bedfordshire*.  
 b. 52. This strikes Fire with a Steel. From *Wanden-Heath*, *Bedfordshire*.  
 b. 53. Out of Clay, near *Tunbridge*.  
 b. 54. Found, with other Pieces, several larger, in a Stratum of Stone in *Hampnet-Quarry*, *Gloucestershire*.  
 b. 55. From the Shores of *Severn*.  
 b. 56. From the Shores of *Shepey-Island*, *Kent*.  
 b. 57. From - - - - - *Northamptonshire*. Mr. *Morton*.  
 b. 58. From a Stone-pit near *Crick*, *Northamptonshire*.  
 b. 59. From the same Stone-pit.  
 b. 60. From the same Stone-pit.  
 b. 61. Found very deep in the Stone-pits of *Half-ton*. Mr. *Morton*.  
 b. 62. Found inclos'd in Stone, in a Quarry at *Aspley*, *Northamptonshire*.  
 b. 63. From a Quarry near *Islip*, *Oxfordshire*. There was a large Quantity of it, but so rotten as hardly to be taken out entire. Pieces of Wood occur pretty commonly in the Quarries of *Oxfordshire*.  
 b. 64. Found in a Gravel-pit near *Wellham*, *Leicestershire*.  
 b. 65. From *Llany Monach Cave*, near *Oswestry*, *Shropshire*.  
 b. 66. From a Chalk-pit, near *Cambridge*.  
 b. 66\*. A Piece of a Stick, ponderous, glossy, of the Constitution of the common Vitriolic Pyrites, as having its Pores saturated with the constituent Matter of the Pyrites. Found on the Shores, among several Pyritæ, near *Portsmouth*. I have frequently observ'd on the Shores of the *Thames*, below *Gravesend*, and on the Sea-Shores of *Kent* and *Essex*, Pieces of Wood, some branch'd, others with Knots; and all having apparently the Grain, Fibres and Texture of Wood, that were thus alter'd by Insinuation of this mineral Matter. And so great is the Quantity of this Matter in them, that when the vitriolic Salts, in some of them that I kept by me, began to start and shoot, as those in the Pyrites are wont to do when kept in a warm humid close Place, the whole Bodies fell all to pieces, and appear'd in Form of a dusky grey Powder with Salts amongst it, exactly like the vitriolic Pyrites, and without

out the least Appearance of any Wood or Vegetable Matter amongst it. But the Compages and Constitution of that is doubtless dissolved by the Action of the Salts in shooting, as set forth above.

## CLASSIS II.

### PARS IV.

#### *Nuts and other like Fruits found in the Earth.*

b. 67. Hazel-Nuts, from the Shores of *Outhorn*. Found with b. 7. & b. 29.

b. 68. Hazel-Nuts, dug up with b. 2. & b. 39. at *Deptford*.

b. 69. Hazel-Nuts, from the *Isle of Wight*, found with b. \* 19. Out of many hundreds of them I have chosen these: and took care to pick some of the largest and fairest that I could. 'Tis plain, at first View, that the far greatest part of them were not full grown, or near ripe. I have open'd many of them, particularly of the largest, but found them hollow, and quite empty; except only one of the largest which had the Kernel very plain, and of the usual shape, but shrunk, much smaller than usual, and hardly so big as a Vetch. Mr. *Stonestreet* saw it with me. Had the Kernels attain'd to any considerable Growth and Consistence before the Nuts were thus bury'd, they would have remained to this day; the Shells of many of them being firm and close, and such Kernels being, when inclosed in the Shells, more likely to be preserved in this close Earth than the Leaves of Hazel, which are frequently found. Of all the Fossil-Nuts I have ever seen, either in the *North*, the *Isle of Wight*, or any other Part of *England*, tho' some few, perhaps by reason of some particular Advantage of Situation and Sun, are somewhat larger; yet the generality of them appear to be of about the Growth and Condition that Hazel-Nuts usually are at the end of *May* or beginning of *June*: and the Deluge began at that time of the Year †. I have observed that the Nuts got off the Trees at that time, have not only the Bulk and Appearance that these Fossil ones have: but likewise that, if kept a while, they are in like manner hollow and empty; tho' when fresh got they be full of a soft pulpy Matter, which in time transpires and passes through the Shell. Not but that sometimes in the recent Nuts I have observed a small Kernel remaining like that mention'd b. 69. There are Nuts, that appear to have been not ripe when repositied there, dig'd up, in great Numbers, about 10 Foot deep, in an original Stratum in *Miln-Close* Lead-Mines, in *Darby* Parish, in the *Peak*. Mr. *Hodgkinson*. *Carew* in his Survey of *Cornwall*, p. 12. mentions Nuts found in Peat-Earth two Miles East of *St. Michael's Mount*.

b. 70. Six Cones of the *Scotch* Pine, taken out of *Lindan Moss* in *Cheshire*. These Cones are fully spread and open'd in such manner as when they cast their Seed: and seem to be of above two Years growth upon the Tree.

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† *Nat. Hist. Earth. Part 3. §. 2. Conf. 5.*

b. 71. Six other Cones of the same sort of Pine which are not open'd and of a growth later than the former by a year. The former are firm and entire, but these being younger and tenderer, are somewhat decayed. Found along with the former. These are of the Growth and Bigness that this Order usually is arrived at about the end of the Month of May.

b. 72. Three Cones seeming to be of the Larix. From *Cherry-Hinton* Chalk-pits near *Cambridge*. These were not come to ripeness or maturity.

b. 73. A Fruit taken out of a Stratum of Gravel in a Pit near *Dorchester, Oxfordshire*. Mr. Doody thinks this a sort of Nutmeg, which Fruit before it is ripe, is spongy and hollow.

## ANIMALIUM PARTES EX TELLURE EFFOSSÆ. CONCHYLIA.

### CLASSIS I.

#### *Conchylia univalvia.*

#### PARS I.

#### *Conchylia univalvia tubulosa.*

#### SECTIO I.

#### *Conchylia Tubulosa figura indeterminata; seu VERMICULI.*

- c. 1. A Vermiculus. From the Chalk-pit, near *Greenhith, Kent*.
- c. 2. From a Stone-pit on *Cowley Common*, near *Oxford*.
- c. 3. & 4. From the Chalk-pits at *Northfleet, Kent*.
- c. 5. From the Chalk-pit near *Hastingfield, Cambridgeshire*.
- c. 6. From *Woodstock-Park, Oxfordshire*.
- c. 7. From *Godstow* near *Oxford*.
- c. 8. From a Clay-pit at *Lambeth*.
- c. 9. From the Fields by *Stow* on the *Wolds, Warwickshire*.
- c. 10. From a Quarry near *Farmington, Gloucestershire*.
- c. 11. From a Field near *Burford, Oxfordshire*.
- c. 12. A Vermiculus growing to a Piece of a *Pinna Marina*. From the great Chalk-pit at *Northfleet, Kent*.
- c. 13. A Vermiculus with a coarse Pebble sticking to it. From a Gravel-pit, near *Wheatland's-Mill*, beyond *North-Leach, Gloucestershire*.
- c. 14. A Vermiculus growing to a *Concha Anomia*. *Sherborn-Park, Gloucestershire*.
- c. 15. Many Vermiculi sticking to a *Concha Anomia*. From *Winchcomb, Gloucestershire*.
- c. 16. Many small Vermiculi sticking to a Shell of the Tree-Oyster-kind. Found near *Comln-Deans, Gloucestershire*.
- c. 17. Several very large Vermiculi in a Mass of Stone, along with numerous Fragments of other Shells. Found near *Oxendon, Northamptonshire*. Mr. Morton.
- c. 18. A Congeries, or Cluster of Vermiculi, found in the Gravel-pit, near *Oxendon-Church, Northamptonshire*.
- c. 19.

- c. 19. Another less Cluster, found near *Cirencester, Gloucestershire*.  
 c. 20. Another found near *Witney, in Oxfordshire*.  
 c. 21. *Vermiculi testa quadrangulari*. From a Gravel-pit  $\frac{1}{4}$  of a Mile West of *Braybrook*.  
 c. 22. A Congeries of small *Vermiculi*. From a Stone-pit, near the Mill, at *Werkton, Northamptonshire*.  
 c. 23. Another from the same Place.  
 c. 24. Another from the Chalk-pit at *Purfleet, Essex*.  
 c. 24 x. A Cluster of *Tubuli* of *Vermiculi marini*, very large. Found in a Stone-pit on *Bullington-Green, near Oxford*.  
 c. 24 \*. A Piece of a *Tubulus*, having on one side Impressions of very small Knobs upon it, set in a *Quincunx* Order, which Impressions it took, when growing, upon the Shell of an *Echinus spatagus*. From the Chalk-pits at *Greenhith*.  
 c. 24 †. Two *Tubuli*, twisted, having circular Fibres, very gross and plain. They are affix'd on a Piece of a *Pinna Marina*. From a Chalk-pit, near *Northfleet, Kent*.

## C L A S S I S I.

## P A R T I S I.

## S E C T I O II.

*Conchylia Tubulosa, curva, versus unam Partem gracilescencia, seu Dentalia.*

c. 25. & 26. Two small Pieces of a grey stoney Matter, with the Surface black and shining, which seem by the Shape to have been each form'd in the Shell of a *Dentale*. Found in a grey Limestone, at *Folkston-Cliff, near Dover, Kent*.

c. 27. Two Pieces, seeming to be Parts of the *Dentale*, lodg'd in Stone. From the Cliffs near *Minster, in the Isle of Sheppey, Kent*.

c. 27 \*. A *Dentale*, [A] out of *Cowley Quarry, near Oxford*. It seems to be *English*: and of a Species that we sometimes find on the Western Coasts.

## C L A S S I S I.

## P A R S II.

*Univalvia Discoidea: seu PATELLÆ.*

c. 28. A *Patella*, with circular Ridges about it. From the Stone-pit at *Teynton*.

c. 29. Another. This, the two following, and c. 35. were given me by Mr. *Jackson*, who died suddenly after, without having acquainted me where he found them. He was very curious: and caus'd Searches to be made after these things, in most Parts of *England*.

c. 30. Another.

c. 31. Another.

c. 32. A small *Patella*, beat out of the Stone of a Quarry near *Eastington in Gloucestershire*.



c. 33. Another small Patella, found in a Stone-pit at *Aulefworth*, *Gloucestershire*.

c. 34. A small Patella mention'd by Dr. *Lister* in *Hist. Conch. lib. 4. Fig. 28.* under the Title of *Patella exigua alba, cancellata, Fissura notabili in margine.* 'Twas found in *Harwich-Cliff*. 'Tis an *English Shell*, and found, at this day, upon the Coast of *Cornwall* and *Devonshire*.

c. 35. A larger. Mr. *Jackson*. vid. c. 29. *supra*.

## CLASSIS II.

### TURBINATA.

#### PARS I.

*Turbinata Figurâ compressâ, clavicula seu voluta apice non eminente.*

#### SECTIO I.

*Claviculâ intus reconditâ: seu NAUTILI.*

d. 1. *Nautilus Gracorum.* Dug up in the Clay-pit near the Wells at *Richmond, Surrey*. This Species is found living at this day both in several Parts of the *Mediterranean-Sea*: and on the Coasts of *America*.

d. 1\*. Another, of the same Species, and found 60 Foot deep in the same Pit, fill'd chiefly with *Pyrites*. 'Tis broke in such a manner as to shew the interior Constitution of the Body; by which means it appears to be really and indubitably a Shell of this Species.

d. 2. Another found at neather *Slaughter, Gloucestershire*. I caus'd this to be saw'd in two, to shew the interior Fabric of it. 'Tis near fill'd with a grey Spar; but there are plain appearances of the transverse Partitions and spinal Fistulas of the Shell. Dr. *Lister* has grav'd it, *L. de Buccinitis. N<sup>o</sup> 24. 25.*

d. 3. This and the following to d. 10. are all of the same Species: and were dug up in the Clay-pit at *Richmond*, above mention'd.

d. 4. d. 5. d. 6. d. 7. d. 8. d. 9. d. 10.

d. 11. Another still of the same Species, found amongst other Shells 114 Foot deep, in sinking a Well at *Kensington Gravel-pits*, in a Bed of blue Clay.

d. 12. *Banbury. Oxfordshire.*

d. 13. *Ibid.*

d. 14. Near *Einsham-Ferry, Oxfordshire.*

d. 15. A *Nautilus*, in which the Marks of the Diaphragms appear on the out side of the Shell. vid. *Museo Moscardo. p. 179. 217.* From *Whitton-Cliff, Lincolnshire*. It has Linear Striæ running along the Back all parallel to the Volutæ.

d. 15\*. Two *Nautiloides*, or Bodies form'd in Shells of the *Nautilus*, compos'd partly of a blackish Stone, and partly of a white Spar. There are, towards the end of the first Voluta, Lines resembling Sutures, not very unlike those of some of the *Ammonitæ*. *Ile of Man*, sent by Dr. *Wilson* Lord Bishop of that Island.



d. 15†. Another, less, being only the interior or central Part of a Body of the same Species with the preceding: and found along with them. In this the Lines resembling Sutures are very visible throughout the whole Stone.

d. 16. A Stone form'd in the Cavity of a Nautilus, with bifurcated Ridges cross the back. In the Stone-pit  $\frac{1}{4}$  of a Mile North-West of Morton, *Lincolnshire*.

d. 17. & 18. Two others less, with some degree of transparency, being compos'd of a brown Spar. These are of the same sort with the foregoing. What the natural Bulk of these are, 'tis not easy to determine, none of them being intire. *Kings-Weston, Gloucestershire*.

d. 19. & 20. Two more of the same sort, but larger. Dug up two Miles from the Sea, near *Weymouth*.

d. 21 & 22. Two Stones cast in Nautili having a double Row of Studs on each side. From *Tocester-fields. Northamptonshire*. Mr. Morton, who sent me one of these, has described this, but wrongly, among the Ammonitæ. *Nat. Hist. Northamptonshire, p. 227. Tab. 9. Fig. 10.*

d. 23. A small Nautilus of a compressed Figure. From *Folkston-Cliff, near Dover*.

## CLASSIS II.

### PARS I.

#### SECTIO II.

*Figura compressa, voluta utrinque conspicua: seu AMMONITÆ.*

*Errores quorundam Scriptorum circa Ammonitas.*

*Cornu Ammonis ex mera terra argillacea constitutum, Statuit.*

*Joh. Reiskius, Miscell. cur. Germ. 1688.*

*Testam esse fatetur Rob. Hook: sed ex Nautilorum Genere Microg.*

P. -----

#### ARTICULUS I.

*Ammonitæ laeves: hoc est sine strigis per latera transversis.*

d. 24. A small Ammonita with the Volutæ smooth and plain, from ----- Mr. Morton.

d. 25. From Rocks of a blue Slate near *Watchet* in *Somersetshire*. Mr. Cole. This seems to be flatted by some external Force, and is plainly compos'd of a pearly Shell; much resembling that of the *Nautilus Græcorum* in Texture and Appearance. Mr. *Hutchinson* in the Searches he made by my direction, in the year 1706, observed incredible Numbers of these Shells, thus flatted, and extremely tender, in shivery Stone about *Pyrton* Passage, *Lime* and *Watchet*. All he saw were near of the same Size: and he imagines them to have been young, tender, and only of some few Months growth. Which is the more probable, because some of the

the Ammonitæ, found in these Parts, that are at full Growth, are so vastly great. *Conf. p. 79. infra.*

d. 25 \*. Found in a Marl-pit, at *Allhampton, Somersetshire*. This Shell is gloss'd over with a brass-like Armature.

d. 25 †. A small Ammonites with the Sides smooth, and the Back ending in a sharp ferrated Ridge. Found in a Clay-pit at *Hannington in Wiltshire*.

## ARTICULUS II.

### *Ammonita lateribus Strigatis, dorso laevi.*

d. 26. & 27. Two Ammonitæ found on the Shores of *Whitton, Lincolnshire*. They were beat out of the neighbouring Cliffs with several other Bodies, by the Wearing of the Sea. They are well preserv'd; the Shells being pretty found and entire. One of the Shells is fill'd mainly with Spar, the other with Stone.

d. 28. & 29. *Togs-hill, Gloucestershire*, between *Bath* and *Bristol*.

d. 30. This has some Remains of the Shell. From *Wick and Abson, Gloucestershire*.

d. 31. This was found on the Shores of *Whitton, Lincolnshire*: and seems to be of the same Species with d. 26. & 27. as also does the following.

d. 32. From the Shores of the River *Humber*, near *Whitton, Lincolnshire*.

d. 33. Found in a Quarry, the most famous in *England*, for Limestone; it being very hard, and making excellent Lime, at *Barrow in Leicestershire*.

d. 34. A Mass of grey Stone, with several Ammonitæ in it, seeming to be of the same Species with d. 26. There are also some other small Shells in the Stone. From the Shores of *Whitton, Lincolnshire*.

d. 35. & 36. Two Pieces of Stone having in them Ammonitæ, appearing to be of the same with d. 26, &c. *Minster-Lovel, Oxfordshire*.

## ARTICULUS III

### *Ammonita porcis seu Strigis dorsum trajicientibus.*

#### DIVISIO I.

##### *Strigis Simplicibus.*

d. 37. Found in sinking a Well at *Great Bowden, Leicestershire*. Sent me by Mr. *Bland*.

d. 38. Two Impressions of an Ammonita in Stone. Found on the side of a high Hill about 2 Miles West of *Stokesley, Yorkshire*.

d. 39, 40, 41, 42. 42 \*. Ammonitæ found in a Marl-pit, in  
" vast

vast Numbers, from the depth of 3 Yards to 18 Yards, at *All-hampton* 3 Miles from *Brewton* in *Somerſetſhire*.

*d.43.* The Edges of this very perfect and beautiful Shell, are ſurrounded with a *Pyritæ*. 'Twas found on the Shores near *Hartlepool* in the Biſhoprick of *Durham*.

*d.44.* A Maſs of Stone, from *Whitton* in *Lincolnſhire*, with Fragments of *Peſtines* in it, and two *Ammonitæ*. The bigger of them ſeems to be of the ſame ſort with *d. 26.* but larger: the other of the ſame ſort with *d.46. & 47. infra.*

*d.45.* Found in the Cliff near the *Spaw* at *Scarborough*, *Yorkſhire*.

*d.46. & 47.* From the Shores of *Whitton*, *Lincolnſhire*.

*d.47\*.* Found on the Shores of *Humber*, near *Hull*.

### ARTICULUS III.

#### DIVISIO II.

##### *Porcis ſeu Strigis bifurcatis.*

*d.48.* The Ridges in this are very much rais'd and ſharp: and the Shell appears very plainly in ſome parts. 'Twas found near *Gritworth*, *Northamptonſhire*. There adheres to it a ſmall *Ammonites* of the ſame ſort with that *d. 58. infra.*

*d.49. & 50.* Taken out of a Bed of Clay about 250 Foot deep, near *Weymouth*.

*d.50\*.* A Segment of a *Cornu Ammonis* with a conſiderable part of the Shell ſtill inveſting it. 'Tis of a lovely ſhining pearly Hue, rather finer than the *Nautilus*. Found in ſinking a Well at *Great-Milton*, *Oxfordſhire*. Mr. *Stoneſtreet*.

*d.51, 52, 53.* Three vaſtly large *Ammonitæ*, dug up in the great Quarry at *Portland*. Theſe lay parallel to the Surface of the Stratum in which they were lodg'd; and about 50 Foot deep.

*d.51\*.* From *Whitby*, in *Yorkſhire*. Found in the Alum Stone, the Stratum of which is 30 Yards thick, and lies 28 Foot deep.

*d.52 x.* Another out of the ſame Alum Stone.

*d.52\*.* Another from the ſame Place (*Whitby*). This has the Diaphragm at the end of the laſt Voluta.

*d.52 x.* Another found in *Mereworth-Park*, 7 Miles from *Maidſtone* in *Kent*. Dr. *Hatley*.

*d.52 †.* An Impreſſion of another in an Alum Stone, found on the Shores near *Whitby*, *Yorkſhire*.

*d.53\*.* A Maſs of Alum Stone, with ſeveral *Ammonitæ* in it, found upon the Shores near *Scarborough*, *Yorkſhire*.

*d.54.* *Windruſh*, *Glouceſterſhire*.

*d.55.* Found in a Gravel-pit near *Wellham*, *Leiceſterſhire*. Mr. *Bland*.

*d.56.* *Paynſwick*, *Glouceſterſhire*.

*d.57.* Found on Plough'd Lands by *Woodſtock-Park*, *Oxfordſhire*.

*d.57\*.* Another from *Woodſton* in *Huntingdonſhire*.

*d.57 †.*

d. 57†. Another, very fair, composed of a bright shining Brass-like Pyrites. It has the Diaphragm at the end of the last Voluta. Found in the Isle of Portland. Mr. Chr. Wren.

d. 58. & 59. From ----- Northamptonshire.

d. 60. From a Quarry  $\frac{1}{4}$  of a Mile North-West of Clipston, Northamptonshire.

d. 61. This is cover'd with a shining brass-like Armature.

d. 62. Found, in a Brook, near Oxford.

d. 63. Found with the former.

d. 64. & 65. The back of these rises into a sharp Edge; but yet is cross'd by the transverse Ridges, and therefore may indifferently be placed either in this or in the next Article.

### DIVISIO III.

*Ammonita strigis bifurcatis dorsum trajicientibus, umbilicati.*

d. 66. This consists of a brown Spar, but has part of the Shell upon it. From ----- Mr. William Cole of Bristol.

d. 67. & 68. Two Pieces of Stone struck forth of the Cavity of the Umbilici of Shells of the same sort with the foregoing. They are of a cochleated Figure: as is the Cavity in which they were found. Mr. Cole.

d. 69. An Umbilicated Ammonites, with a double Order of Studs on each side. Found near Standish, Gloucestershire.

d. 70. From Portland Quarry.

### ARTICULUS IV.

*Limbo acuminato per totum dorsum ducto.*

#### DIVISIO I.

*Limbo inter duos Sulcos erecto.*

d. 70\*. A very large Ammonites. From Portland Quarry.

d. 71. 72, 73. & 74. Found in Whitby Alum-Mines, along with d. 51\*, &c.

d. 74 x. Another, found on the Plough'd Lands upon the Hill on which Glaffenbury Tor stands, Somersetshire.

d. 74†. Another from the same Place. This is bent in such manner that one of the Sutures was open'd by that means. It seems to have been so bent before the Stone had acquired its utmost hardness.

d. 74\*. Found near Keynsham, Somersetshire. Vid. Camden's Brit. p. 73. & 82. Edit. 1695. This has Parts of the Shell still remaining upon it.

d. 75. Found in a Close on the North-side of Sherborn, Gloucestershire.

d. 76. A Segment of a pretty large Ammonites. Standish, Gloucestershire.

d. 77. A Segment with Sutures very fair and plain upon the Surface. *Sherborn North-Fields, Gloucestershire.*

d. 78. A small Segment cover'd with the Shell. 'Tis of a Pearl Colour, like that of the common Sea-Nautilus. Dug up at the great Clay-pit at *Richmond, Surry.*

d. 79. & 80. Found by the River *Cherwell*, at *St. Clements* near *Oxford.*

d. 81. This *Ammonites* has a double Order of Studs on each side. In a Bed of Chalk by the Road near ----- about three Miles on this side of *Middle-Colinbourn, Berkshire.*

d. 82. A large Segment of an *Ammonites*. Found on *Lansdown*, near *Bath.*

## DIVISIO II.

*Dorso acuminato absque sulcis secundum Dorsum ductis.*

d. 83. Found in a Brook near *Brixworth, Northamptonshire.*

d. 84. From *Oxendon*. Mr. Morton. The Dorsum of this terminates in an Edge which is very prettily crenated or notch'd, like the Edges of the Leaves of some Plants. He has since describ'd this, *Nat. Hist. of Northamptonshire.* p. 225. Tab. 9. Fig. 3.

d. 85. Stone-pit near *Crick.*

d. 86. From - - - - in *Northamptonshire.* Mr. Morton.

d. 86 \*. Another, less, very fair, with the Shell on, and the Diaphragm at the end of the last Voluta. Found in a Clay-pit, near *Hannington, Wiltshire.*

d. 87. *Fairford, Gloucestershire.*

d. 87 \*. From *Byfield, Northamptonshire.* Mr. Morton.

d. 88. Found in a Stone-pit near *Clipston.* Mr. Morton.

d. 89. A Mass of Stone with several of the same sort of *Ammonitæ*. From the same Stone-pit.

d. 90. A Vitriolick Aluminous Pyrites with *Ammonitæ* in it. Found in a Bed of Alum-stone 30 Yards deep, at *Peak* near *Scarborough, Yorkshire.* [This is since dissolved, and perish'd.]

d. 91. & 92. Found at *Allhampton*, in the same Pit with d. 39. &c.

d. 93. Found loose on the very Top of *Susfield-Hill*, near *Hackness, Yorkshire.* This is a vast Hill, and very high.

d. 94. Found loose at the bottom of a Quarry near *Nunnington, Yorkshire.*

## ARTICULUS V.

*Sulco unico per dorsum ducto.*

d. 95. This *Ammonites* I found in the North-Field of *Sherborn, Gloucestershire.*

d. 95 \*. Another, little different, only the *Strigæ* are not so much raised; found in the Road near *Keynsham.* In this some of the Sutures open, but not so much as in d. 74 †.

d. 95 †.



d. 95†. Part of the outermost *Voluta* of another; set, on each side the *Sulcus*, with a double Row of Spikes. *Folkston-Cliff, Kent.*

# APPENDIX.

## *Impressions and Fragments of Ammonitæ.*

d. 96. An Impression of an *Ammonites*, found near *Outhorn, Yorkshire.*

d. 97. Another Impression. *Over-Slaughter, Gloucestershire.*

d. 98. Another, very fine, found a quarter of a Mile North-West of *Clipston, Northamptonshire.*

d. 99. Another, found in Mr. Howard's Field, at *Marston-Trussell, Northamptonshire.*

d. 100. This is a very fair Impression of an *Ammonites* upon a Flint. From *Shugborow, Warwickshire.*

d. 101. Part of an *Ammonites*, with several Shells adhering to it. From the Shores of *Humber*, near *Whitton, Lincolnshire.*

d. 102. The Body of this Stone is worn, but part of the Shell plainly appears. From the same Shores.

d. 103 & 104. Two Pieces of *Ammonita*, with white Spar in their Cavities; but the Edges of both the *Voluta* and *Diaphragms* of the Shells plainly appear; both of them from the same Shores with the precedent.

d. 105. A Fragment, shewing the *Diaphragms*. *Scarborough, Yorkshire.*

d. 106. Another, invested with a pearly Shell, having the Sutures finely display'd upon its Surface. From the Shores near *Whitton, Lincolnshire.*

d. 107, 108, & 109. Three others, with the Sutures as fine, from the same Shores.

d. 110. Another. From *Slauston, Leicestershire.*

d. 111, 112, 113, & 113\*. Four Pieces of *Ammonita*, parted at the Sutures. From *Folkston-Cliff*, near *Dover*. These shew the Sutures, and the Joints, in a manner very clear and plain.

d. 114. Another, in Stone. Found in a Clay-Pit by *Lambeth.*

d. 115. A Joint of an *Ammonites*. From the Cliff near *Whitton, Lincolnshire.*

d. 116. Another, consisting of a brown Spar. From ----- Mr. Morton.

d. 117. Another lesser Joint. From a Gravel-Pit, near *Bedford.*

d. 118. Another, from a Stone-Pit, near *Desborough, Northamptonshire.*

d. 119. From *Folkston-Cliff*, near *Dover.*

d. 120. Three small Joints. From a Stone-Pit on the East-side of *Kitsby, Northamptonshire.*

d. 121. A Fragment, shewing the *Diaphragms* at each Extremity. Found near *Silverton, Devonshire.*

## CLASSIS II.

## PARS II.

*Turbinata quibus Oris Margo ductu continuo ad Columellam per-  
tingit. Sc. Trochi, Cochlea, Nerita.*

## SECTIO I.

*Turbinata quorum Voluta exteriores in aciem quandam  
exsurgentes acuminantur: seu*

## TROCHI.

## ARTICULUS I.

*Trochi Forma compressore.*

*e. 1, 2, 3, 4.* Four *Trochi*, all of the same Species, dug up in the great Clay-Pit at *Richmond, Surrey*.

*e. 4\**. Three more of the same, join'd by a *Pyrites*. Out of the same Pit.

*e. 5, 6, & 7.* Three *Copperas Pyrita*, cast in Shells of the foregoing Species. From still the same Clay-Pit.

*e. 8 & 9.* Two larger, and of another Species. From the same Pit.

*e. 10 & 11.* Two *Copperas Pyrita*, form'd in Shells of the same sort with the foregoing. From the same Place. [Dissolv'd in Tract of Time, and perish'd.]

*e. 12.* A brown Sparry Stone, moulded in a *Trochus*. Found in the Fields near *Paynswick, Gloucestershire*.

## ARTICULUS II.

*Trochi Forma elatiore.*

*e. 13.* A brown Stone, very fair, and finely cast in a Species of *Trochus*. Found in a Stone-Pit near *Cirencester, Gloucestershire*.

*e. 14.* Another, form'd in a Shell of the same Species. Found in a Stone-Pit at *Eastington, Gloucestershire*.

*e. 15.* A turbinated Stone, larger, being at the Basis 2 Inches  $\frac{1}{2}$  in Diameter. Found near *Weymouth*.

*e. 16.* Another, somewhat less. Found in the North-Field of *Sherborn, Gloucestershire*.

*e. 17.* Another, larger than either of the precedent. Found above 100 Foot deep, in the Chalk-Pit at *Northleat*.

*e. 18.* Another, very fair, 2 Inches in Diameter at the Basis, and 1 Inch  $\frac{3}{10}$  in Perpendicular. Found in a Quarry in *Randcomb-Parish, Gloucestershire*.

*e. 19.* Another, little different, found on the plough'd Lands in *Lassington-Fields, near Gloucester*.

e. 19\*. Another. Found in a Quarry near *Keynsham* in *Somersetshire*.

e. 20. A larger, found in a Stone-Pit on *Shot-over-Hill*, near *Oxford*.

e. 21. The Shell of a *Trochus*, fill'd with Stone, and having some arenaceous Matter adhering to the Outside of it. 'Tis 1 Inch  $\frac{8}{10}$  in diameter: and about 1 Inch in perpendicular. Found in the Cliffs near *Whitton*, *Lincolnshire*.

e. 22. Another larger, from the same Cliffs.

e. 23. Another still larger, found near *Gloucester*.

e. 23\*. A *Trochites*, very fair. Found near *Tame*, in *Oxfordshire*.

e. 24. A small Stone, form'd in a *Trochus*, about an Inch and  $\frac{1}{4}$  in diameter, and  $\frac{8}{10}$  of an Inch in perpendicular. Found in a Stone-Pit, near *Tetbury*, *Gloucestershire*.

e. 25. Another, of near the same Bulk, having yet part of the Shell upon it. From *Whitton-Cliffs*, *Lincolnshire*.

e. 26. A small *Trochus*, struck out of a Piece of Stone, in the Wall of the great Park at *Sherborn*, *Gloucestershire*.

e. 27. Another smaller, [A] being not bigger than a common Pea; found in Stone, about 20 Foot deep, in the Home-Quarry, *Sherborn*, *Gloucestershire*. This Species is at this Day found living in our Seas; and is figured by Dr. *Lister* under the Title of *Trochus pyramidalis, variegatus, Limbo angusto in summo quoq; Orbe circumditus*. *Hist. Conchyl.* l. 4. s. 8. n. 1.

e. 27\*. Two larger. *Southampton*.

e. 27†. A *Trochus*, with the Clavicle much depress'd, and a concave Basis, out of Stone, raised near *Stifford*, in *Essex*.

## SECTION II.

### COCHLEÆ.

#### ARTICULUS I.

##### *Forma compressiore.*

e. 28. A very hard, grey, turbinated Stone, 4 Inches in Base; and the *Voluta*, where thickest, near an Inch and a half thick. Found in the South-Fields of *Sherborn*, *Gloucestershire*.

e. 29. Another, somewhat less, of a brown Colour. There adhere to the upper part of this many Granules of a Stoney Matter, that in Tract of Time had affix'd upon it as it lay expos'd to Rain, &c. on the Surface of the Earth, after the Shell, in which 'twas moulded, was beat off and gone; which frequently befalls all sorts of form'd Stones that lie so expos'd amongst a fine arenaceous, or a loose sparry Matter. This was found in a Close of *Sir Ralph Dutton*, on the North-side of *Sherborn*, *Gloucestershire*.

e. 30. A *Cochlites*, of the same sort of Stone, but less, being not quite 2 Inches broad. Near *Dursley*, *Gloucestershire*.

e. 30\*. From a Cliff, near *Spitton*, *Yorkshire*. This has the Shell yet covering it.

e. 31. A Piece of a reddish Stone, exhibiting a Cochlea 1 Inch  $\frac{1}{2}$  in Diameter, split horizontally. By this means, the interior part of the Shell is shewn to be fill'd with Stone of the same sort with that that environs it without. Found in a Stone-Pit near *Shipson*, beyond *Turk-Dean, Gloucestershire*.

e. 31<sup>x</sup>. A *Cochlites*, about an Inch in Diameter. In the Fields near *Tewkesbury, Gloucestershire*.

e. 31\*. Another, somewhat less. This is the most perfect, the Impression or Mould of the Shell being the most exquisitely taken off that ever I saw. 'Twas struck out of the middle of the Mass of a Stratum of Stone in *Portland Quarry*.

## ARTICULUS II.

### *Cochlea clavacula brevi.*

e. 32. This small Shell has Stripes of brown, very thick, running parallel with the *Voluta*. 'Twas found in a Stone-Pit, near *Sir Ralph Dutton's House, Sherborn, Gloucestershire*.

e. 33, 34. Two more; [A] from *Harwich-Cliff*. They are *English*. Dr. *Lister* entitles this Species *Nerita edentulus laevis*; though they seem rather to be *Cochlea*.

e. 35. A Stone form'd in another of this kind. *Barrington, Gloucestershire*.

e. 36. Nine, [A] of different Growth and Size, but all of the same Species; from the Tyle Clay-Pit at *Richmond*. This seems to be the *Cochlea sublivida ore fusco ad Basin cujusq; orbis velut funiculus depingitur*. *Listeri Hist. Conchyl. N° 19*.

e. 37. Two veruccated. *Clipston-Quarry, Northamptonshire*.

e. 37†. Three, very small, with *Stria* parallel to the *Voluta*. All found about *Sherborn, Gloucestershire*.

e. 38 & 39. *Harwich-Cliff*. This is found, though rarely living at this Day, on the Coast of *Guernsey*. 'Tis figur'd by Dr. *Lister* under the Title of *Buccinum bilingue striatum labio propatulo digitato*. *Hist. Conchyl. L. 4. S. 12. N° 20*.

e. 40, 41. *Stifford, Essex*.

e. 42. Spar, cast in one of the same Species. From the same Place.

e. 42\*. This seems [A] to be the *Cochlea rufescens, fasciis maculatis*, of Dr. *Lister*. *Hist. Animal. Angl. p. 163. Tit. 9*.

e. 43. A Copperas Pyrites. *Richmond Clay-Pit, Surrey*. [Perished.]

e. 44. *Southampton*.

e. 45, 46, 47, 48. Found in a Pit near *Stawell, Gloucestershire*.

e. 49. The Shell, wherein this *Cochlites* was form'd, being dissolved before the Body was turned forth of the Stratum, is here succeeded by a grey Spar, that in Shape and Thickness resembles the Shell, being cast in the Cavity that the Shell before posses'd. *Sherborn, Gloucestershire*. Conf. Not. ad e. 54. infra.

e. 50, 51. Found in a Stone-Pit, near *Hartleborough, Northamptonshire*.

e. 52. *Aulsworth, Gloucestershire*.

e. 53. *Garsington, Oxfordshire*.

e. 54. *Lechlade, Gloucestershire*. This, like e. 49. *supra*, is cover'd with a sparry Crust in lieu of the Shell; which having been dissolv'd by Water, carrying vitriolick Salts, the same Water carrying also sparry Particles, repositied them in the place possess'd by the Shell so dissolv'd and carry'd away; which place being of the Form and Dimensions of the Shell, the Spar filling it, must of course be so too. When the Strata are, by ploughing, or other external Agents, broke up, the Bodies inclos'd in them are turn'd forth, whether cover'd with the real Shells, in which they were cast, or with these factitious Crusts, or with none, where the Water draining thro' the Mass of the Strata, happens to have in it no sparry Particles.

e. 55. *Cirencester, Gloucestershire*.

e. 56. *Broad-Risington, Gloucestershire*.

e. 57. *Notgrave, Gloucestershire*.

e. 58. *Woodstock, Oxfordshire*.

e. 59, 60, 61, 62. All compres'd. Found in the great Quarry at *Barrington, Gloucestershire*.

### ARTICULUS III.

#### *Cochlea Clavicula productiore.*

e. 62\*. Four, dug up in a Marl-pit at *Hanton*, by the River *Medway*, in *Kent*. Sent by Dr. *Halley*, who formerly publish'd an Account of the Bodies dug up in this Pit. *Philos. Transf.* N° 155. p. 463.

e. 63. Two, found in a Brook near *Lubenham, Leicestershire*.

e. 64. Found near *Eynsham-Ferrey, Oxfordshire*.

e. 65. *Whitton-Cliffs*.

e. 65\*. This has Strigæ, thick set with Tubercles, running parallel to the Volutæ of the Shell. Found in a Quarry near *Cowlin-Deans, Gloucestershire*.

e. 66. Stone-pit, near *Stawell, Gloucestershire*.

e. 67. Clay-pit, at *Richmond, Surrey*.

e. 68. Found in the great Quarry at *Barrington, Gloucestershire*. Graved by Dr. *Lister*, *Append. ad Hist. Conchyl.* l. 4. de *Buccinitis*, T. 1038. N° 15.

e. 69. Four, *Stifford, Essex*.

e. 70. From the Shores near *Whitton*.

e. 70\*. Six, very small. All found about *Sherborn, Gloucestershire*.

e. 71. *Aulsworth, Gloucestershire*.

e. 72. *Wimdrush, Gloucestershire*.

e. 73. *Coln-Deans, Gloucestershire*.

e. 74. From the great Sand-pit, near *Woolwich, Kent*.

e. 74\*. *Tanworth-Quarry, Gloucestershire*.



e. 75. [A] Four, out of a Marl-Pit, near *Wiggan, Lancashire*. This Species is found living, at this day, on our Coasts; and is figured by Dr. *Lister* under the Title of *Cochlea alba dense striata orbis primi superiore parte paulo depresso*. Hist. Conchyl. L. 4. Sect. 5. N° 57.

e. 76. Four vitriolick Pyrites. *Sheppey-Island, Kent*. [3 of these perished.]

e. 77. Eight, spirally studded. They lay about 12 Foot deep in a blue Clay, among several other sorts of Shells, in the great Sand-Pit at the West-end of *Woolwich*.

e. 78. Found on the plough'd Lands near *Turk-Dean, Gloucestershire*.

e. 79. *Winchcomb-Fields, Gloucestershire*.

e. 80. Out of a Stone-Pit on *Cowley-Common, near Oxford*.

e. 81. Out of a Stone-Pit on *Shot-over-Hill, near Oxford*.

### SECTION III.

*Apertura oblonga, clavicula intus recondita. CONCHA VENERIS.*

e. 82. A small one, [A] found in the great Clay-pit at *Richmond, Surrey*; appearing to be the same with Dr. *Lister's Concha Venerea exigua alba Cylindracea*. N° 70. Hist. Conchyl.

e. 83, 84. Two large ones, from *Southampton*, seeming to be form'd in Dr. *Lister's Concha Veneris major leviter & dense striata*. N° 71. Hist. Conchyl.

### CLASSIS II. PARS III.

*Turbinata sinu [ex quo Lin~~na~~ exoritur] ad Columellam donata.*

#### SECTION I. ARTIC. I.

*Apertura oblonga Figura Pyramidali. RHOMBI.*

e. 85. Two very small *Rhombi*. From - - - *Northamptonshire*.

e. 86, 87. Two others, [A] larger, very fair; one of 'em with the native Colour. Mr. *Jackson*. Vid. c. 29. *supra*. This Species is common in our *West-India* Islands; and I have seen of the same found upon the Coasts of *Yerksire*, near *Whitby*.

#### ARTIC. II.

*Figura Cylindroide. CYLINDRI.*

e. 88. Six small *Cylinders*. Found with the precedent.

e. 88\*. Two others. From - - - in *Northamptonshire*.

e. 88\*. Two larger. *Norleach, Gloucestershire*.

## SECTION II.

*Apertura subrotunda: BUCCINA.*

## ARTIC. I.

*Sinu ad Columellam non rostrato.*

## DIVISIO I.

*Clavicula brevior.**e. 89.* From *Southampton*.*e. 90, 91, 92, 93, 94, 95, 96, 97, 98.* All found in the great Tile Clay-Pit at *Richmond, Surrey*.*e. 99, 100.* *Stifford, Essex*.*e. 101.* *Richmond Clay-Pit, Surrey*.*e. 102.* *Ibidem*.*e. 103.* White, smooth. Found with *e. 87 & 88*.

## DIVISIO II.

*Clavicula productior.**e. 104.* Two, small. Found with the precedent.*e. 105.* [A] The *Buccinum brevi rostro cancellatum dense sinuosum, labro dentato*, of Dr. *Lister*, N<sup>o</sup> 21. *Hist. Conchyl.* From *Harwich-Cliff*.*e. 106.* A small one, [A] of the same Species. From the same Cliff.*e. 107.* [A] The *Buccinum brevi rostro, magnum, tenue, leviter striatum*. *List. Hist. Conch.* N<sup>o</sup> 15. Found, with other Shells, about a foot deep in Sand, 2 Miles from the Sea, in the Marshes near *Croft, Lincolnshire*. They are common on the *English Shores*.*e. 108.* A Stone, seeming to be form'd in a Shell of the same kind with the foregoing. *Portland-Quarry*.*e. 108\**. [A] From *Harwich-Cliff*. *Buccinum brevi rostro album*, &c. N<sup>o</sup> 19. *List. Hist. Conch.* Found commonly among Rocks on the Shores round *England*.*e. 109.* Taken out of a Stratum of Limestone, in a Quarry on the top of a high Hill by *Thornton*, 2 Miles from *Pickering, Yorkshire*. There appear great number of Ova of Fishes in the Stone.*e. 110.* *Richmond Clay-Pit, Surrey*.*e. 111.* Two *Buccina*. *Ibid*.*e. 112.* Five others, seeming to be of the same Species. *Woolwich*, out of the same Pit with those *e. 77*. There were of the same Species dug up, along with several Bivalves, near *Bromley in Kent*.*e. 113.* Eight long turbinated Stones, seeming to be form'd in like Shells with *e. 112*. In vast Strata of Stone in *Portland-Quarry*, at 15 Foot depth.*e. 113\**. One larger, from the same Quarry.*e. 114.* Found with *e. 86*.

## SECTIONIS II. ARTICULUS II.

*Buccina Rostrata.*

e. 115. Out of *Harwich-Cliff*.

[A] e. 116. *Buccinum rostratum gracilius*. List. Hist. Conch. N<sup>o</sup> 5. From *Harwich-Cliff*. This Species is found sometimes in the Sea on the Coasts of *Yorkshire*.

e. 117. From the same Cliff.

e. 118. From the Cliffs of *Sheppey-Island, Kent*. Turbinated Pyrites.

e. 119. Another turbinated Pyrites, *ibid*. [Dissolv'd and perish'd.]

e. 120. Another, *ibid*. [Dissolv'd and perish'd.]

e. 121. Another. *Richmond Clay-Pit, Surrey*. [Dissolv'd and perish'd.]

e. 122. Five *Buccina*. Out of the same Clay-Pit.

e. 123. Two turbinated Pyrites, seeming to be form'd in like Shells with the precedent. *Sheppey-Island*. [Perish'd.]

e. 124. Four *Buccina*, with the *Clavicula* longer than the precedent. From *Richmond Clay-Pit*.

e. 124\*. Two others of the same Species. Found, with several others, about 40 Foot deep, in sinking a Well by Sir *Barr. Shore's* House on *Pinner-Hill*; which is considerably higher than *Harrow-on-the-Hill*, as was found by an actual Survey. They lie at about 4 Miles distance. I saw several turbinated Shells of different kinds that were found along with these.

e. 125. Four Pyrites, from *Sheppey-Island*, seeming to be form'd in Shells of the same Species with those e. 124, & e. 124\*.

e. 126. One seeming to be of the same sort, but compress'd. *Richmond Clay-Pit, Surrey*.

e. 127. A *Buccinum*. *Ibid*.

e. 128. Seven, of another Species. *Ibid*.

e. 129. Three turbinated Pyrites, seeming to be form'd in Shells of the same Species. *Sheppey Cliffs*.

e. 130. *Buccinum*. *Richmond Clay-Pit, Surrey*.

e. 131. Another. *Ibid*.

e. 132, 133, 134, 135, 136, 137. Six *Buccina*, much resembling the *Buccinum rostratum majus, crassum, &c.* List. Hist. Conch. N<sup>o</sup> 4. but that the Twist in this is different from that of the others; this being an *Heterostropha*, the Twists turning from the Right-hand to the left. From *Harwich-Cliff*.

## SECTIO III.

*Buccina Bilingua.*

e. 138, 139. *Buccinum* [A] *bilingue Striatum labro propatulo digitato*. List. Hist. Conch. N<sup>o</sup> 20. *Stifford, Essex*. This is sometimes found on the *English Shores*. *Aldrovandus Mus.* p. 844. N<sup>o</sup> 1. has one of this Species, or very like it.

## SECTIO IV.

*Purpura, sive Buccina rostro obliquo, testâ velut ex plicis quibusdam composita.*

e. 140, 141, 142. From *Richmond Clay-Pit*, Surrey.

## APPENDIX.

e. 143, 144, 145, 146. From *Marcham Stone-Pits*, within two Miles of *Abingdon*.

## CLASSIS III.

*Conchylia Bivalvia.*

## PARS I.

*Aurita.*

## SECTIO I.

*Sinu ad Cardinem trigono in utraq; testâ, seu PECTINES.*

## ARTIC. I.

*Ambitu ad Margines subrotundo.*

## DIVISIO I.

*Superficie latâ, vel saltem Striis minutis admodum & vix conspicuis inscripta.*

f. 1. *Crick Stone-Pit*, Northamptonshire. Mr. Morton.

f. 2. Found, in plough'd Lands, near *Stunsfield*, Oxfordshire.

## DIVISIO II.

*Striata Striis Circularibus.*

f. 3. Found near *Weymouth*.

f. 4. Near *Oxford*.

f. 5. *Rislington-parva*, Gloucestershire.

f. 6. *Ibid.*

## DIVISIO III.

*Striis à Cardine ad Marginem ductis.*

f. 7. *Fairford*, Gloucestershire.

f. 8. Near *Gloucester*.

f. 9.

f. 10. *Lechlade*, Gloucestershire.

f. 11. *Sherborn*, Gloucestershire.

f. 12. *Ibid.*

f. 13. *Fairford*, Gloucestershire.

f. 14.

- f. 14. Two. Farmington, Gloucestershire.
- f. 15. Chalk-Pit, at Northfleet, Kent.
- f. 16. Chalk-Pit, at Greenwich, Kent.
- f. 17. Northleach, Gloucestershire.
- f. 18. Found amongst Gravel, near Henley upon Thames.
- f. 19. Coln-Rogers, Gloucestershire.
- f. 20. Stowell, Gloucestershire.

#### DIVISIO IV.

##### *Superficie sulcata.*

- f. 21. Near Cheltenham, Gloucestershire.
- f. 22. Little-Risington, Gloucestershire.
- f. 23. King's-Weston, Gloucestershire.
- f. 24, 25. Found in the Banks of the River Welland, Northamptonshire.
- f. 25<sup>x</sup>. Found loose on the Side of a pretty high Hill near Stokesly, Yorkshire.
- f. 25\*. Bowden-parva, Northamptonshire. Mr. Morton.
- f. 26. In a Stone-Pit on Cowley-Common, near Oxford.
- f. 27. Ibid.
- f. 28. Near Gravesend, Kent.
- f. 29. From a Gravel-Pit, near Greenhythe, Kent.
- f. 30. Woodstock-Park, Oxfordshire.
- f. 31. Found, on plough'd Lands, near Eynsham-Ferry, Oxfordshire.
- f. 32.
- f. 33. Shot-over-Hill, near Oxford.
- f. 34. Stone-Pit, Cowley-Common, near Oxford. I observed of the same Species by the Oxford Road, about five Miles short of Gloucester.
- f. 35. Ibid.
- f. 36. Hanworth Gloucestershire.
- f. 36<sup>x</sup>. Another of the same Species, but less. Sherborn, Gloucestershire.
- f. 36\*. Lechlade, Gloucestershire.
- f. 37. Crick Stone-Pit, Northamptonshire. Mr. Morton.
- f. 37\*. A small Pecten, [A] very fair. Harwich-Cliffs. This is an English Shell, and the same with that figur'd by Dr. Lister, Hist. Conchyl. Lib. 3. N<sup>o</sup> 27 & 28. with this Title; *Pecten mediocris latus, ex rufo variegatus, circiter viginti Striis tenuiter admodum striatis distinctus.*
- f. 38. Hilderskill-Quarry, Yorkshire.
- f. 39. Gravel-Pit, near Islington, Middlesex.
- f. 40. Near Sherborn, Gloucestershire.
- f. 41. Sir Ralph Dutton's Home-Quarry, Sherborn, Gloucestershire.
- f. 42. Out of a Quarry in Northleach-Fields, Gloucestershire.
- f. 43. Out of the same Quarry.



f. 44, 45, 46, 47, 48, 49, 50. *Cowley-Common*, near *Oxford*, in a *Stone-Pit*.

f. 51. Found in a *Quarry* on the top of a high *Hill* near *Thorn-ton*, *Yorkshire*.

f. 52. Near *Gritworth*, *Northamptonshire*.

f. 52\*. An *Impression* of a *Pecten*, very fair, upon a yellowish *Flint*. Found near *Walthamstow*.

f. 53. *Impression* on a grey *Flint*. Found on *Oak-of-Honour-Hill*, beyond *Peckham*, *Surrey*.

f. 54. *Trumpington-Fields*, near *Cambridge*.

f. 55. *Banstead-Downs*, *Surrey*.

f. 56. Near *Rygate*, *Surrey*, in a *Chalk-pit*.

f. 56\*. *Chalk-Pit*, *Lullingston-Park*, *Kent*. This is perfect and very fair.

f. 57. *Chalk-pit*, near *Croydon*, *Surrey*.

f. 58. *Chalk-pit*, by *Greenhith*, *Kent*.

f. 59. Full of *Flint*. *Chalk-pit* at *Northfleet*, *Kent*.

f. 60. *Ibid.*

f. 61. *Chalk-pit* at *Greenhith*, *Kent*.

f. 62. *Chalk-pit*, *Purfleet*, *Essex*.

f. 63. *Chalk-pit*, *Northfleet*, *Kent*.

f. 64. *Chalk-pit*, near *Charlton*, *Kent*.

f. 65. *Chalk-pit*, near *Greenwich*, *Kent*.

f. 66, 67. *Chalk-pit*, near *Northfleet*.

f. 67\*. A common black *Flint*, form'd in a *Shell* of the same Species with the foregoing, with parts of the *Shell* adhering to it, very fair. *Boxley-Hill*, *Kent*.

f. 68. Part of this *Shell* being broken off, shews the common black *Flint* cast in it as in a *Mould*. There's a *Mass* of like *Flint* concreted and form'd on the *Outside* of this *Shell* likewise. 'Twas taken out of a *Stratum* of *Chalk* near 100 *Foot* deep in the great *Chalk-pit* at *Northfleet*, *Kent*.

f. 69. Out of the same *Chalk-pit*.

f. 70. Out of a *Quarry* near *Farmington*, *Gloucestershire*.

## ARTICULUS II.

*Pectines*, *Marginis ambitu versus unam partem longius producto*.

f. 71, 72, 73, 74, 75, 76, 77. From the *Cliffs* of *Whitton*, *Lincolnshire*.

f. 78. Found near *Scarborough Spaw*.

f. 79. *Shot-over-Hill*, near *Oxford*.

f. 80. *Ibid.*

f. 81. *Ibid.*

f. 81\*. Two, of the same Species with the preceding. *Woodston*, *Huntingtonshire*.

f. 82. *Broadwell-Grove*, *Oxfordshire*.

f. 83. *Hampnet-Quarry*, *Gloucestershire*.

f. 84. Out of *Gravel* near *Chelsea-College*.

f. 85. *Cliffs* of *Humber*, near *Whitton*, *Lincolnshire*.

f. 86, 87. Out of a *Quarry* near *Sherborn*, *Gloucestershire*.

f. 88. *Aulsworth*, *Gloucestershire*.

f. 88\*.

- f. 88<sup>x</sup>. *Stawell-Fields, Gloucestershire.*  
 f. 88\*. *Farmington-Grove, Gloucestershire.*  
 f. 89. *Near Oxford.*  
 f. 90. *Barrington, Gloucestershire.*  
 f. 91. *Coln-Deans, Gloucestershire.*  
 f. 92. *Ibid.*  
 f. 93. *Turk-Dean, Gloucestershire.*  
 f. 94. *Randcomb, Gloucestershire.*  
 f. 95. *Moreton, Gloucestershire.*  
 f. 96. *Wirney, Oxfordshire.*  
 f. 97. A *Pecten*, with the Ridges fewer, and placed at greater distance than is usual in this kind. Found in the Road between *Kettering* and *Rothwell, Northamptonshire.*  
 f. 97\*. Another, of the same Species, found near *Ashley, Northamptonshire.* Mr. *Sawyer.*

## ARTICULUS III.

*Pectines Figura angusta à cardine ad Marginem oblonga.*

- f. 98, 99, 100, 101. Found on the plough'd Lands near *Coln-Dean, Gloucestershire.*  
 f. 102. *Broadwell-Grove, Oxfordshire.*  
 f. 103. *Tangley, Oxfordshire.*  
 f. 104, 105. *Scarborough, Yorkshire.*  
 f. 105\*. Found by the Road near *Pickering, Yorkshire.*  
 f. 106. A grey Stone, form'd in a Shell of an uncertain kind, but seeming to have been a *Pecten*. It was found in a Quarry near the River *Medway*, on this side *Maidstone, Kent.*

## SECTIO II.

*Conchylia aurita Cardine dentato, seu SPHONDYLI.*

- f. 107, 108. Found in a Stone-pit near *Thorp-Malsor, Northamptonshire*; and are pretty common in the Pits of that Field. This seems to be of the same Species with a *Spondylus*, commonly found in the *West-Indian Seas.*  
 f. 109. From the Cliffs near *Whitton, Lincolnshire.*  
 f. 110. *Burford, Oxfordshire.*

## SECTIO III.

*Conchylia aurita Cardine laevi, seu Margaritifera.*

- f. 111. Found in a Stone-Pit, on *Cowley-Common, near Oxford.*  
 f. 112, 113. Two *Margaritifera*, of an oblong Shape, out of a Quarry near *Farmington, in Gloucestershire.*  
 f. 113<sup>x</sup>. Another, less, of the same Species. From the great Quarry at *Barrington, Gloucestershire.*  
 f. 113\*. Two more, of a Shape more round. From *Windrush Quarry, Gloucestershire.*

## CLASSIS III. PARS II.

*Bivalvia non aurita testis imparibus.*

## SECTIO I.

*Altera testa plana.*

## ARTIC. I.

*Figura lata patula, rostro brevi vel nullo, OSTREA.*

## DIVISIO I.

*Ostrea labris non crenatis.*

f. 114. A Pair [A] dug out of a little Hill near *Hedley*, in *Surrey*. This, and the following to f. 125\*. are all of the same Species with the common Oyster.

f. 115, 116. *Ibid.* [A]

f. 116\*. A Pair, [A] taken out of a Stratum of a sandy Marl, such as is betwixt the Valves of the Shell. Near *Reading*, *Berkshire*. There were, in the same Stratum, great Numbers more of these Shells.

f. 117, 118, 119, 120. Found [A] about 10 Foot deep in a Bed of Marl, lying over the Sand, in the great Sand-pit at the farther End of *Woolwich*, *Kent*. There were here, besides Oysters, *Conchæ*, *Buccina*, and other Shells, all of the very same sorts with those found in the great Sand-pit at the hither End of *Woolwich*: as also elsewhere on *Black-Heath*, and about *Stifford*, in *Essex*. The Stratum wherein they lie, is generally six or eight Foot thick: and the Shells in it are so numerous, and lie so close, that the Mass is almost wholly composed of Shells, there being only a very little Marl interpos'd. The Shells, in the Stone of *Stifford*, lie almost as thick in it.

f. 121. *Widrington-Fields* [A] near *Randcomb*, *Gloucestershire*.

f. 122. Stone-pit, [A]  $\frac{1}{4}$  of a Mile North-West of *Morton-Line*.

f. 122\*. [A] This has several fair *Vermiculi Marini*, and a small Oyster adhering to it. Out of the great Quarry at *Barrington*, *Gloucestershire*.

f. 123. Stone-pit, [A] near *Oxford*. *Ostracites*, a Stone form'd betwixt the two Valves of an Oyster-Shell, one of them being struck off.

f. 124. Another *Ostracites*; both Shells being gone. Found near the precedent.

f. 125. Fields [A] near *Quainton*, *Bucks*.

f. 125\*. *Richmond* [A] Clay-pit, *Surrey*.

f. 126. On the plough'd Lands on the top of a Hill, by *Wheatland's Mill*, beyond *Northleach*, *Gloucestershire*.

f. 127. From *Thingdon* Stone-pit, *Northamptonshire*.

f. 128. Three Pair, and three single Shells. Found in the Brook and Fields about *Marston-Trussel*, *Northamptonshire*

f. 129. Cliffs of *Humber*, near *Whitton*.

f. 130,

f. 130, 131, 132, 133, 134, 135. *Ibid.* These have all Marks upon them, by which they appear to have stuck to Shells, Stones, Shrubs, or other Bodies.

f. 136. *Ibid.*

f. 137. Found near *Sherif-Hutton, Yorkshire.*

f. 138, 139. These two Oysters, when young affixing to an *Ammonita*, have taken Impressions from the Shell. Found in *Ashley-Field, Northamptonshire.* Mr. *Sawyer*, Rector of the Town.

f. 140. In a Gravel-pit, near *Barly, Cambridgeshire.*

f. 141. A vast thick Shell found in a Bed of blue Clay, a Mile and half East from *Weymouth*, 50 Foot higher than the Sea.

f. 142. *Oxendon Gravel-pit.* Mr. *Morton.*

f. 143. On a Hill near *Eynsham-Ferry*, upon the plough'd Lands, *Oxfordshire.*

f. 144. & 145. In the Fields near *Quainton, Buckinghamshire.*

f. 146. Plough'd Lands, near *Eynsham-Ferry*, with f. 143.

f. 147. *Fullbrook, Oxfordshire.*

f. 147 \*. Found upon an Hill near *Stroud, Gloucestershire*, among several others of the same Species. There is on the *Cardo*, the Impression of another Shell, to which this had affix'd during the Growth of it.

f. 148. *Minchinhampton, Gloucestershire.*

f. 149. Fields near *Gritworth, Northamptonshire.* The concave Shell of this and of all the following to f. 166 inclusive, have Marks of their adhesion to other Bodies in like manner as is observ'd of various kinds of Shell-Fish, now living at Sea. They affix themselves to Stones, and other solid Bodies, the better to secure themselves against the Agitations of the Water of the Sea.

f. 150, 151, 152, 153. Found in the great Quarry near *Barrington* in *Gloucestershire.*

f. 154, 155. Near *Sherborn, Gloucestershire.* This is the *Otites* of Dr. *Plot.*

f. 156. Near *Sherborn, Gloucestershire.*

f. 157. *Ibid.*

f. 158. *Ibid.*

f. 159. *Tangley, Oxfordshire.*

f. 160, 161. Stone-pit at the North End of the Town of *Thingdon, Northamptonshire.*

f. 162, 163, 164, 165, 166. In a Stone-pit near the Mill at *Workton, Northamptonshire.*

f. 167. In a Stone-pit near *Wheatland's-Mill*, beyond *North-Leach, Gloucestershire.*

f. 167 x. Another from the Vale of *Gloucester.*

f. 168. *Haddington, Oxfordshire.*

f. 169. *Richmond, Yorkshire.* [Dissolv'd and perish'd.]

f. 170, 171. *Whitton Cliff, Lincolnshire.*

## DIVISIO II.

*Ostrea Marginibus dentatis Arborea dicta, quod Arboribus & Fruticibus in Littore Maris nascentibus adharere solent.*

f. 172, 173, 174. In a Stone-pit  $\frac{1}{4}$  of a Mile North-West of Morton, Lincolnshire.

f. 174\*. Found in a Stone-pit near Peterborough.

f. 175. Three Shells. Found on Plough'd Lands near Cirencester, Gloucestershire.

f. 176. Stow on the Wolds, Gloucestershire.

f. 177. Grav'd by Dr. Lister de Conchitis, Plate 446. No 37.

f. 178. Islip, Oxfordshire.

f. 179. From a Stone-pit in the Road between Kettering, and Rothwell, Northamptonshire.

f. 180. In a Stone-pit near Gritworth, Northamptonshire.

## ARTICULUS II.

*Figura angusta Rostrum longa recurvo.*

*These are commonly call'd Conchæ rugosæ or Crow-stones, they are frequent in Italy. Bonanni Obs. Testac. p. 103. Bishop Evans of Bangor, gave me one from Angliffa. I have seen of them from Leppington in Yorkshire, and the Fields near Ailsbury.*

f. 181. From the Shores near Pyrton Passage, on this side of the Severn.

f. 182. From Ditchford, Worcestershire.

f. 183. Witney, Oxfordshire.

f. 184, 185, 186, 187. From the Vale of Gloucester.

f. 188, 189. From the Cliffs at Whitton, Lincolnshire.

f. 190. From the Banks of the River near Bugthorp, Yorkshire.

f. 191. Out of a Brook near Northleach, Gloucestershire.

f. 192. Shatover-Hill, near Oxford.

f. 192\*. Found in a Quarry at Tuerton near Bath.

f. 193. Morton, Gloucestershire.

f. 194, 195. The Opercula, or flat Shells, from the Vale of Gloucester.

f. 196. Pyrton-Passage over the River Severn.

f. 197. From the Cliffs near Whitton, Lincolnshire.

f. 198. From Bugthorp River, found with f. 190, Yorkshire.

f. 199. Plough'd Lands near Painswick, Gloucestershire.



## CLASSIS III.

## PARTIS II.

## SECTIO II.

*Bivalvia non aurita, Testis imparibus, utraq; Testa convexa,  
Vertice rostrato, seu ANOMIÆ.*

Some of these which follow in this Catalogue, are grav'd by Dr. Lister. APPEN. ad Hist. Conchylior. l. 3. de Conchitis. N<sup>o</sup> 13, 14, 15.

There are so great Numbers of these Shells found about *Sherborn* in *Gloucestershire*, where I was, at Sir *Ralph Dutton's* House, several Months, that I thought it endless to note all the Places. Those therefore, in this Section, that have not the Places noted, were all found about *Sherborn*, where they are call'd *Pundibs*: and lie as thick on the plough'd Lands, in some Fields about this Town, as I think I ever saw Pebles or Flints elsewhere.

The *Anomia læves* are also found near *Wickham* in *Kent*, *Bisfefer*, in *Caldy Island*, *Wales*, *Bridport*, *Dorsetshire*, in great Numbers.

*Concha Anomia in Helvetia Montibus reperta, J. Scheuchzer Specimen Lithogr. Helvet. p. 25. Et in Italia. Fab. Columna de Purp. c. 12.*

## ARTICULUS I.

*Anomia læves.*

## DIVISIO I.

*Anomia læves Margine imo in duos Angulos terminato.*

f. 200. Found in sinking a Well near *Farrington*, *Berkshire*.

f. 200\*. Two from *Woodston*, *Huntingtonshire*. Mr. *Morton*.

f. 201. Found in *Silverton Quarry*, *Devonshire*.

f. 201†. Of Spar, the Shell most of it struck off.

f. 202, 203. From *Colverton* in *Leicestershire*, on the Edge of *Rutlandshire*.

f. 204, 205.

f. 206. Near *Farrington*, *Berkshire*.

f. 207, 208.

f. 209. 210. Found in a small Stone-pit near *Cranford*, *Northamptonshire*.

f. 211. Found near *Oxendon*, *Northamptonshire*. Mr. *Morton*.

f. 212. f. 213. f. 214.

f. 214‡. Found by the River *Avon*, *Wiltshire*. Mr. *Stonesfree*, who says 'tis that which Mr. *Lhwyd* calls *Sacculus longissimus*. *Lithophylac. p. 42. N<sup>o</sup> 872.*

f. 214\*. Fill'd with Spar, Oxendon, Northamptonshire.

f. 214x.

f. 215, 216. Tog's-Hill, between Bath and Bristol.

f. 217.

## DIVISIO II.

*Anomia laeves Margine subrotundo plano.*

f. 218. Two from a Stone-pit near Desborough, Northamptonshire.

f. 218\*. f. 219. f. 220.

f. 221. In a Stone-pit near Stawell, Gloucestershire.

f. 222. Withington Fields near Randcomb, Gloucestershire.

f. 223. Greenhith Chalk-pit, Kent.

f. 223\*. Broke out of the same Stone with f. 403.

f. 224. Oxendon. Mr. Morton. It seems to be of the same Species, and found in the same Place with f. 218.

f. 225. In Sir Ralph Dutton's Vineyard, at Sherborn, Gloucestershire. Jan. 13, 16 $\frac{8}{9}$ . The first Fossil Shell I ever found.

f. 226.

f. 227. In the Fields near Wellingborough, Northamptonshire.

f. 228. A yellowish Flint, form'd in this Species, the Shell gone. Out of a Gravel-pit, near Islington-Wells.

f. 229.

f. 230. Farrington, Somersetshire.

f. 231. f. 232. f. 233.

f. 234. In a Stone-pit near Stawell, with f. 221.

f. 235. f. 236. f. 237. f. 238. f. 239. f. 240.

f. 241. Twenty small ones, all found about Sherborn, Gloucestershire.

f. 241x. Two, found in a Quarry, on the side of an high Hill, near Silverton, Devonshire.

f. 241†. Two, from the same Quarry.

## DIVISIO III.

*Anomia laeves Margine sinuato.*

f. 242, 243, 244, 245, 246, 247. From the Stone-pits about Crick, Northamptonshire. These and the two following have only one Sinus. The others under this Membrum have all of 'em three.

f. 248. f. 249.

f. 250, 251, 252. Withington Fields near Randcomb, Gloucestershire.

f. 253. f. 254. f. 255.

f. 256. Candlesby, Lincolnshire.

f. 257. Two adhering together from the Vale of Gloucester.

f. 258. Two more, one infix'd into the other. Out of a Stone-pit near Oxford.

f. 259.

f. 260. Grafton Quarry, Northamptonshire.

f. 261. Greenwich Chalk-pits, Kent.

f. 262. Purfleet Chalk-pits, Essex.

f. 263. Chalk-pit by Croydon, Surrey.

f. 264.

- f. 264. Chalk-pits near *Deptford*.  
 f. 265. Chalk-pit at *Greenhith*; the Shell empty, *Kent*.  
 f. 265\*. From a Chalk-pit near *Northfleet*. *Kent*.  
 f. 266. In Flint, from a Gravel-pit on *Hampstead-Heath*.  
 f. 267. Fill'd with Flint, *Deptford* Chalk-pits.  
 f. 268. Chalk-pits, *Purfleet*, *Essex*.  
 f. 269. *Greenhith* Chalk-pit, *Kent*.  
 f. 270. *Northfleet* Chalk-pit, *Kent*.  
 f. 270\*. Found in a Chalk-pit on *Boxley-Hill*, *Kent*.  
 f. 271. *Rygate* Chalk-pit, *Surrey*.  
 f. 272. *Charlton* Chalk-pit, *Kent*.  
 f. 273. Four small, *Northfleet*, *Kent*.  
 f. 274. A single Valve, Chalk-pit near *Greenwich*, *Kent*.  
 f. 275. Another, *Northfleet*.  
 f. 276. Another small, *Greenhith*.  
 f. 277. A very large one, *Withington* Fields near *Randcomb*,  
*Gloucestershire*.  
 f. 278.  
 f. 279. From a Pit near *Stawell*, *Gloucestershire*, with f. 221 & 234.  
 f. 280. f. 281. f. 282.  
 f. 283. Compress'd and broken. Out of *Hampnet* Quarry,  
*Gloucestershire*.  
 f. 284. *Withington* Fields near *Randcomb*, *Gloucestershire*.  
 f. 285. *Grafton* Quarry, *Northamptonshire*.  
 f. 285\*. The Shell in this is gone, it being a Flint, blackish,  
 with a Cast of Green, form'd in a Shell. Found near *Edgeborough*  
 in *Buckinghamshire*.  
 f. 286. f. 287. f. 288.  
 f. 289, 290. *Randcomb* Park, *Gloucestershire*.  
 f. 291. f. 292. f. 293. f. 294. f. 295. f. 296.  
 f. 297. f. 298. f. 299. f. 300. f. 301.  
 f. 301\*. Found 35 Fathom deep in a Coal-pit near *Malls-*  
*Meaburn*, *Westmorland*.  
 f. 301†. Found in a Quarry on the side of an Hill near *Silver-*  
*ton*, *Devonshire*.

#### DIVISIO IV.

*Anomia laevis Margine subrotundo crenato.*

- f. 302. f. 303.  
 f. 304, 305, 306, 307, 308, 309, 310, 311. From a Pit near  
*Stawell* in *Gloucestershire*, with f. 221, 234, & 279.  
 f. 312. f. 313. f. 314.  
 f. 315, 316, 317, 318, 319. Pit near *Stawell*, along with f. 304,  
 &c. These and the next, viz. f. 320. are not only crenated,  
 but have *Sulci* coming a pretty way up the Body of the Shell:

tho' not so as to reach the *Cardo*, as they do in those of the following Article.

f. 320. *Randcomb-Park*.

## ARTICULUS II.

*Anomia à Cardine ad Marginem striata.*

I have seen of these from *Bridport, Dorsetshire. Caldy Island, Wales. Castle-Cary, Somersetshire. Chalk-pits near Guilford.*

f. 321. Three small ones fill'd with the Pyrites. From the Cliffs of *Sheppey Island*. [These are dissolv'd, and perish'd.] The Pyrites is very apt, in tract of Time, to fall to pieces: and, by that means, I have lost some of the most elegant Bodies in this Collection.

f. 322. Another, from the same Cliffs, somewhat larger.

f. 323. Six from *Dudley in Staffordshire*. I take one of these to be that grav'd by Dr. *Lister*. APPEN. ad lib. 3. *Hist. Conchyl. de Conchitis*. N<sup>o</sup> 8.

f. 323 \*. One of the Shells of this has a large Sinus: the other is prominent, and rises as much. From the *Isle of Man*. Dr. *Wilson* Lord Bishop of the Island.

f. 324, 325, 325 \*. Sent by Dr. *Nicholson*, Lord Bishop of *Carlisle*, from *Cumberland*.

f. 326. Chalk-pit, near *Rygate in Surrey*.

f. 327, 327 \*, 328. *Greenbith Chalk-pit, Kent*.

f. 329. *Ibid.*

f. 329 \*. Two from the great Chalk-pit near *Northfleet, Kent*.

## ARTICULUS III.

*Anomia à Cardine ad Marginem sulcata.*

### DIVISIO I.

*Labiis in eodem Plano commissis.*

f. 330. Consisting chiefly of a white Spar, most of the Shell being shiver'd off, and gone. *Heddington, Oxfordshire*.

f. 331. Three. *Burford, Oxfordshire*.

f. 332. Three. *Woodstock, Oxfordshire*.

f. 333. Found in the River *Calne* near *Compton in the Hole, Gloucestershire*.

f. 334. Impression in a grey Stone. Stone-pit near *Stawell, Gloucestershire*.

f. 335. Impression in a dusky green Flint. In the Road near *Pancridge*.

f. 336. Impression in a grey Flint. *Sydenham Common* near the Wells.

f. 337. Impression with the Shell. *Harrow on the Hill, Middlesex*.

f. 337 a.

f. 337 a. A convex Impression, in a flinty Pebble, *Camberwell, Surrey.*

f. 337 b. A concave Impression, very small, plough'd Lands near *Oxford.*

f. 337 c. Another larger, Gravel-pit, *St. George's-Fields, Southwark.*

f. 337 d. Another Impression of a Shell still larger, in an Agate, found in a Gravel-pit a little beyond *High-gate, Middlesex.*

f. 338. Six small ones. *Woodstock, Oxfordshire.*

## DIVISIO II.

### *Margine aliquantulum sinuato.*

f. 339. Eight small ones. Found about *Northleach, Gloucestershire.*

f. 340. Four, *Northfleet Chalk-pits.*

f. 341. Four. From *Withington Fields* near *Randcomb, Gloucestershire.* That Body in *Aldrov. Mus.* p. 878. N<sup>o</sup> 3. seems to be of this sort. He ranks it very erroneously amongst the *Astroitæ*: as indeed he does *Echinitæ, Cornua Ammonis, &c.*

f. 342. Two, *Burford, Oxfordshire.*

f. 343. A convex Impression on a grey Flint. Top of *Shooter's Hill, Kent.*

f. 344. Concave Impression in a flinty Pebble, *Kentish-Town, Middlesex.*

f. 345. A Shell in a flinty Pebble, brown and grey, *Stoke-Newington, Middlesex.*

f. 346. A Piece of a flinty Pebble, grey with a Cast of yellow: The whole Stone was large; but shatter'd to Pieces in breaking: There is lodg'd in it a small *Concha Anomia*, broken on one part, and having its inside thick set with small crystalline Shoots, or Sparks. Found near *Stratford, Essex.* The three Agate Mocho Plates, in the first part of the Catalogue of the Fossils of *England, viz.* those that are Native. N<sup>o</sup> e. 21. q. r. f. p. ---- were cut off this Stone from the Shell thus lodg'd in it: it appears that this kind of Mocho Agates was dissolv'd, at the Deluge, as well as the rest, and as Flints, and other Nodules.

f. 347. *Gritworth, Northamptonshire.*

f. 348. *Sudbury, Gloucestershire.*

f. 349. *Sherborn, Gloucestershire.*

f. 350. *Badmington, Gloucestershire.*

f. 351. *Barrington, Gloucestershire.*

f. 351\*. Found about 30 Foot deep in a Stratum of Stone, near *Silverton, Devonshire.*

f. 352. *Sherborn, Gloucestershire.*

## DIVISIO III.

### *Margine magis sinuato:*

f. 353. *Hedington, Oxfordshire.*

f. 354. *Dursley, Gloucestershire.*

Σ

f. 355:



- f. 355. Sherborn, Gloucestershire.*  
*f. 356. Ibidem.*  
*f. 357. Witney, Oxfordshire.*  
*f. 358. Sherborn, Gloucestershire.*  
*f. 359. Bold Aston, Gloucestershire.*  
*f. 360. Berkley, Gloucestershire.*  
*f. 361. Sherborn, Gloucestershire.*  
*f. 362. Fill'd with Spar, ibid.*  
*f. 363. Another broken, so as to shew the Constitution of the Spar, Sherborn, Gloucestershire.*  
*f. 364. King's-Weston, Gloucestershire.*  
*f. 365. Sherborn, Gloucestershire.*  
*f. 366, 367, 368. Tog's-Hill, between Bath and Bristol.*  
*f. 368\*. King's-Weston, Gloucestershire.*  
*f. 369, 370. Two compressed from Tog's-Hill.*  
*f. 371. Very large, Withington Fields near Randcomb, Gloucestershire.*  
*f. 371\*. Found near Badminton, Gloucestershire.*  
*f. 372, 373, 374, 375, 376, 377. From Colderton, in Leicestershire, on the Edge of Rutlandshire.*  
*f. 378. Found on the East side of Downham Gills, Yorkshire. There were many more of the same.*  
*f. 379. Dudley, Staffordshire.*  
*f. 380. Forest of Dean, Gloucestershire.*  
*f. 381. Found in the Stone-pit, at Brick in Northamptonshire.*  
*f. 382. Two, the one infix'd into the other. From the same Stone-pits.*  
*f. 383. Sherborn, Gloucestershire.*  
*f. 384. Purfleet Chalk-pit, Essex. Mr. Doody.*  
*f. 385. Walsal, Staffordshire.*  
*f. 386, 387, 388, 389. These have no Rostrum, but were found in Shells of the same Species with the precedent. Found near Farrington, Somersetshire.*

### SECTION III.

*Bivalvia incerti Generis sed qua Anomiis Fab. Columnæ accedere videntur.*

#### ARTICULUS I.

*Figura à Cardine ad Marginem oblonga, Rostro adunco.*

- f. 390. Found in a Clay-pit near Lambeth.*  
*f. 391. Out of the same Clay-pit.*  
*f. 392, 393, 394, 395. From the Cliffs at Folkston, near Dover. These are here found in great Numbers: and are of the same Species with the preceding.*  
*f. 396. Impression of a like Body, upon a Flint. Found in a Gravel-pit on Hamstead-Heath.*

f. 396\*. Digg'd up in a Pit of Clay, used for making Tyles, in *Childrens-Field*, in the Parish of *Thurnham*, 3 Miles from *Maidstone* in *Kent*. Dr. *Harley*. There were several others of the same Species.

## ARTICULUS II.

*Figurâ à Latere ad Latus oblongâ, Rosfro brevi.*

f. 397. A very large one grav'd by Dr. *Lister*, de *Conchitis*, Plate 465. Taken out of a Lead-Mine, near *Worksworth*, in the *Peak*.

f. 398, 399. Out of a Stratum of Stone, in another Mine at *Worksworth*.

f. 400. Another. Mr. *Morton*, from - - - - -.

f. 400\*. *Musculo Mathioli accedens*. This ought to be rank'd among the *Polyleptoginglymi Forma oblongâ*. *Dudley*, *Staffordshire*.

f. 401. Out of a Lead-Mine on *Richmond-Moor*, *Yorkshire*.

f. 402. Out of a Lead-Mine, belonging to Mr. *Bathurst* in *Arkendale*, *Richmondshire*. It lay in a Stratum 90 Foot deep.

f. 403. *Dudley*, *Staffordshire*.

f. 403\*. *Cumberland*. Bishop *Nicholson*.

f. 403\*. *Isle of Man*. Bishop *Wilson*.

f. 403†. *Cumberland*. Mr. *Fitz Roberts*.

f. 404. This was taken out of a Stratum of 63 Yards deep, at the bottom of one of Mr. *Bathurst's* Mines in *Arkendale*, *Richmondshire*.

f. 405. Found in the River near *Threpland*, *Westmorland*.

f. 406, 407. Two, on one the concave, on the other the convex Impression. Mr. *Southwell*. *King's-Weston*, *Gloucestershire*.

f. 408. Found 30 Yards deep at *Arkendale*, in the same Stratum with f. 402. *supra*,

f. 408\*. Found among many others, in a Stratum of slaty Stone, at the Brow of a vast Precipice, on the top of *Windedg*, a very high Hill in *Arkendale*, *Yorkshire*. This part, where these are found, is perhaps the highest Ground in *England*, and the most raised above the Surface of the Sea. It lies near the mid-way betwixt the East and West Sea: and some few Miles distant, in another Ridge of Hills, about the same Height with this, there arise Streams that pass into those two opposite Seas.

f. 409. *Cumberland*. Bishop *Nicholson*.

f. 410. Mr. *Southwell*, *King's-Weston*, *Gloucestershire*.

f. 411. *Dudley*, *Staffordshire*.

f. 411\*. From the *Isle of Man*. Bishop *Wilson*.

f. 412. *Minster*, in the *Peak*.

f. 413. Lead-Mine near *Worksworth* in the *Peak*. Figur'd by Dr. *Lister*, de *Conchitis*, Plate 464, n. 25.

f. 413x. *Isle of Man*. Bishop *Wilson*.

f. 413 \*. A Shell of the same Species, and in like Stone, from the Isle of *Anglesey*. Dr. *Evans*, Lord Bishop of *Bangor*.

f. 414. From Colonel *Byerly's* Lead-Mines, 2 Miles from *Richmond*, in *Yorkshire*.

f. 415. [Dissolv'd, and perished.]

f. 416. Bishop *Nicholson*, *Cumberland*.

f. 417. Bishop *Nicholson*, *Cumberland*.

### CLASSIS III. PARS III.

*Bivalvia non Aurita, Testis paribus.*

#### SECTIO I.

*Ad Cardinem commissuram Dentibus multis minutis donata,*  
*sen LEPTOPOLYGINGLYMI.*

#### ARTICULUS I.

*Figura subrotunda.*

[A]f. 418, 419. Given me by Mr. *Jackson*, vid. c. 29. *supra*. This Species of Shell-fish, is pretty commonly found upon our own Shores. One of these still retains the natural Colour, and both of them are very perfect and fair. All to f. 425 inclusive, seem to be of the same Species.

f. 420, 421, 422. *Harwich-Cliff*.

f. 423. Found in a Gravel-pit, on the North side of *Shooters-Hill*, *Kent*.

f. 424, 425. Found in sinking a Well, at *Brompton*, *Kent*.

#### ARTICULUS II.

*Figura oblonga.*

f. 426. *Shotover-Hill*, near *Oxford*.

f. 427. *Barrington*, *Gloucestershire*.

f. 428. On the top of an Hill near *Wheatlands-Mill*, beyond *Northleach*, *Gloucestershire*.

f. 429. *Aulesworth*, *Gloucestershire*. This and the two following seem to be the same Species which is figur'd by Dr. *Lister*, among the Muscles, N° 207. of his *Hist. Conchyl.* and which is at this day found in the Seas of *Jamaica*. There is also an *English* Shell amongst the *Pect. Polyleptoginglymi*, N° 69. not much unlike it.

f. 430, 431. Mr. *Jackson*, vid. c. 29. *supra*.

f. 431 \*. *Pectunculus exiguus albus admodum tenuiter striatus*. *List. Hist. Conchyl.* L. 3. N° 69. 'Tis found in the Western Coasts of *Dorsetshire*, *Devonshire*, &c. This was taken out of the Stone of a Quarry near *Sherborn*, *Gloucestershire*.

f. 431.

f. 431 x. Four small Cuneiformes, and a Stone form'd in a Shell of the same sort, from *Clipston Quarry, Northamptonshire*.

f. 431 \*. Four, found in a blue Clay in digging the Canal at the Earl of *Montague's-House* at *Boughton, Northamptonshire*.

f. 431 †. Another, of the same sort, dug up in a Tile-Clay-pit in *Turnham Parish*, 3 Miles from *Maidstone, Kent*.

f. 432. A Stone form'd between the 2 Shells of a Bivalve, which seems reducible to this kind. Found in the Quarries about *Quainston*, in *Buckinghamshire*. Mr. *Stonestreet*.

## SECTION II.

*Bivalvia testis paribus, paucis Dentibus majoribus ad Cardines donata.*

### ARTICULUS I.

*Figura subrotunda, seu PECTUNCULI.*

#### DIVISIO I.

##### *Laves.*

[A] f. 433. *Richmond Clay-pit*. This is the *Pectunculus Maximus subfuscus valde gravis* of Dr. *Lister* in his *Hist. Conch.* N° 108. In his *Hist. Animal. Angliae*, he calls this *Concha, è maximis, admodum crassa, rotunda, è nigro rufescens. Conf.* N° p. 79, *infra*. *Aldrovandus* found one of this Species in a Mountain near *Bononia*, in *Italy*, *Museum*, p. 465.

[A] f. 434. Another. *Ibid.* Lodg'd in a large Mass of the *Ludus Helmontij*. 'Tis evident from this, that these *Ludi* are Nodules: and were form'd before the Subsidence at the Deluge. The whole of this is accommodated to the Shell: and a Crust of the yellow Matter of that sort that the Partitions of this Body are compos'd of, immediately surrounds and invests the Shell on all sides. The Shell is fill'd with a Pyrites. *vid. f. 681. infra*, that also being of this sort, and thick set with Fragments of Shells in all parts.

[A] f. 435. Another, *ibid.*

[A] f. 436. Another with a Pyrites concentered upon it. *Ibid.*

[A] f. 437. Another, *ibid.*

[A] f. 438. Another, *ibid.*

[A] f. 439. Another less, *ibid.*

[A] f. 440. Another, *ibid.* The Shell of this being struck off, shews a Pyrites molded in it.

[A] f. 441. Another still less, *ibid.*

[A] f. 442. Another less yet, *ibid.*

[A] f. 442 x. Another, *ibid.* This is so small, as not much to exceed a large Pea in bigness. There are great numbers of this Size, as also of Pyrites of the same Size, and form'd in such Shells, found in this Clay-pit.

[A] f. 442 \*. Two Pyrites, of the same Size and Shape with

the precedent, and seeming to be form'd in the Shells. These from the Cliffs of *Sheppey Island*.

f. 442 †. A Stone form'd in a *Pectunculus* somewhat more convex than that f. 433. otherwise little different from it. The Shell it self being perished and gone, is succeeded by a sparry Crust. When it so fell out that Shells were lodged in Stone that was lax and porous, so as to give Passage to Water, that, pervading the Stone and carrying with it Salts, Particles of Spar, or other Minerals, whose constituent parts are scabrous or angulated, by little and little frets, wears and carries off the parts of the Shell. And in tract of time, the Water continuing still to pass, deposits, in the room of the Shell, Particles of such sparry or other mineral Matter as it happens to bear along with it, successively, till it has fill'd the Cavity. Now the Matter being thus collected and cast in the Place which the Shell took up, it must in course assume the very shape of that Shell. Which seems to be the whole of this Affair, that has much amused some People who have not thoroughly considered these things. This was taken out of a Stratum of Stone on *Gazington-Hill, Oxfordshire*.

f. 442 ✱. Another Stone, formed in a Shell of the same Species with the precedent. Out of a Quarry near *Quainton in Buckinghamshire*.

f. 443. Found on the plough'd Lands on a Hill near *Wheatland's Mill, beyond Northleach, Gloucestershire*. This is one sort of the *Bucardites*.

f. 444. Another of the *Bucardites*. *Badminton, Gloucestershire*.

f. 445. Another, less, *Stow on the Wolds, Gloucestershire*.

f. 446. [Dissolv'd, and perish'd.]

f. 447. *Harwich Cliff*.

f. 448. Another, of the same Species, in Stone; with Stone also moulded in it. From the same Cliff.

f. 449. Stone moulded in another of the same Species. From *Southampton*.

f. 449<sup>x</sup>. A *Pyrites* moulded in another of the same Species. *Sheppey-Island, Kent*.

f. 450. Another Shell little different from f. 447. There is a Shell from the *West-Indies*, very like this, yet not the same. This was found in the great Sand-pit near *Woolwich*: There are vast numbers of them, lying amongst other Species, in Strata 10 or 12 Foot deep, for near  $\frac{1}{4}$  of a Mile together. They are found among a great variety of other Shells, also in all the Sand-pits upon *Black-Heath*: in the Stone by the Road, betwixt *Stifford* and *South Okenden*: as also at *Orsett*, which lies about three Miles East of it.

f. 451. Another, *ibid*.

f. 452. Another, from the Sand-pit upon *Shooter's-hill*.

f. 453. A Pair, somewhat less, out of a Stratum of Stone near *Stifford, Essex*.

f. 453<sup>z</sup>. Two single Shells, of the same Species, and out of the same Stone with the foregoing.

f. 454.



- f. 454. Another, *Sherborn, Gloucestershire*.  
 f. 455. Another, *Windrush, Gloucestershire*.  
 f. 456. Another, Mr. *Jackson*. *Conf. c. 29. supra*.  
 f. 457. From the great Chalk-pit near *North-street, Kent*.  
 f. 458. Found near *Pickering, Yorkshire*.  
 f. 459. On the ploughed Lands, on the North-side of Sir *Ralph Dutton's* new Park, at *Sherborn, Gloucestershire*.  
 f. 459<sup>x</sup>. Found near *Pickering, Yorkshire*. There were more of the same.  
 f. 460, 461. *Sherborn, Gloucestershire*.  
 f. 462. *Farmington, Gloucestershire*.  
 f. 463. On a Hill, near *Wheatland's Mill*, beyond *Norleach, Gloucestershire*.  
 f. 464. Out of the great Quarry, at *Barrington, Gloucestershire*.  
 f. 464<sup>x</sup>. Found in the Fields near *Turk-Dean, Gloucestershire*.  
 f. 465. *Portland Quarry*.  
 f. 466. *Aulesworth, Gloucestershire*.  
 f. 467. *Widdrington-Fields, Gloucestershire*.  
 f. 468. *Cowley, near Oxford*.  
 f. 469. *Marston, Northamptonshire*. Dr. *Evans*, Lord Bishop of *Bangor*, sent me one of the same Species, found in the *Isle of Anglesey*.  
 f. 470. *Widdrington, near Randcomb, Gloucestershire*.  
 f. 471. *Sherborn, Gloucestershire*.  
 f. 472. Found on the side of a pretty high Hill, two Miles West of *Stokesley, Yorkshire*. *Vid. f. 536*.  
 f. 473. From Sir *Ralph Dutton's* Home-Quarry, *Sherborn, Gloucestershire*.  
 f. 473<sup>x</sup>. A small one; from Sir *Ralph Dutton's* Home-Park, *Sherborn*.  
 f. 474. Cliffs of *Sheppey-Island*.  
 f. 475, 476, 477, 478, 479. This Species of Shell is found in the Seas about *Jamaica*, and the adjacent Parts; and is called by Dr. *Lister*, *Hist. Conchyl. N° 138. Pectunculus albus admodum crassus sinu sive Sulco conspicuus*. These were given me by Mr. *Jackson*. *Conf. c. 29. supra*.

## DIVISIO II.

### *Pectunculi Fasciati.*

f. 480. This is an *English* Shell, [A] but fretted and worn. 'Tis called by Dr. *Lister*, in his *Hist. Conch. Pectunculus omnium crassissimus, Fasciis ex latere bullatis donatus*, N° 122. Given me by Mr. *Jackson*. *Conf. c. 29. supra*.

f. 481. *Barrington, Gloucestershire*.

f. 482, 483, 484, 485. In a Quarry near *Halston, Northamptonshire*.

f. 486. Four. *Richmond* Clay-pit, *Surrey*. The Shell of one of these is perforated with a small round Hole, as if bored by the Tongue of the *Purpura*. See my Answer to *Camerar. p. - - -*

f. 487. Two Pyritæ, moulded in Shells of this Species; and found in the same Place.

f. 488. *Sherborn, Gloucestershire.*

f. 489. *Ibid.*

f. 489<sup>x</sup>. Found in *Harwich-Cliff*. The *Fasciæ* in this are very small and fine.

f. 490. *Windrush, Gloucestershire.*

f. 491. Sir Ralph Dutton's Kitchen-Garden. *Sherborn, Gloucestershire.*

f. 492. *Northleach, Gloucestershire.*

f. 493, 494. *Sherborn, Gloucestershire.*

f. 495, 496. *Sherborn, Gloucestershire.*

f. 497. *Oxendon, Northamptonshire.*

### DIVISIO III.

*Pectunc. Fig. subrotunda, striati à Cardine ad Marginem.*

f. 498. *Richmond Clay-Pit, Surrey.*

f. 499. *Stifford, Essex.*

f. 500. *Ibid.* This lies upon a Shell of the same sort with f. 453.

f. 501, 502. *Ibid.*

f. 503, 504. *Barrington, Gloucestershire.*

f. 505, 506. Pyritæ. *Sheppey*. [Dissolved and perished.]

### DIVISIO IV.

*Pectunculi Fig. subrotunda à Cardine ad Marginem sulcati.*

f. 507. [A] This, and the following, to 519<sup>x</sup>. were given me by Mr. Jackson. *Conf. c. 29. supra.*

f. 508. f. 509. f. 510. f. 511. f. 512. f. 513.

f. 514. This [A] and the following, to f. 519. inclusive, are now found upon the Coasts of *England*; and perhaps the seven foregoing may be of the same sort. These six are nearly of the same Size and Growth.

f. 515. f. 516. f. 517. f. 518. f. 519.

f. 519<sup>x</sup>. A Piece of a large Cockle, but so broken, as to appear like an entire small one.

f. 520. A small one, from the Quarry near *Sherborn, Gloucestershire.*

f. 521<sup>st</sup>. A Piece of a large Cockle; found in a Chalk-pit near *Rygate*. This is the *Pectunculus crassus, maculatus striis imbricatis conspicuus*. *Lit. Hist. Conchyl. N° 160.* which is at this time found on the Coasts of the *Leeward-Islands* and *Jamaica*.

f. 522. An Impression, found in sinking a Well near *Marybone, Middlesex.*

f. 523. *Harwich-Cliff.*

f. 524, 525. *Ibid.*

f. 526, 527. [A] These two lay a Foot deep in the Sand, two Miles from the Sea, in the Marshes near *Croft, Lincolnshire.*

Mr.

Mr. Morton. This is our common Cockle. *List. Hist. Conchyl.* N<sup>o</sup> 171.

f. 528. Another of the same; [A] found with several more 30 Foot deep, in digging to make a Sluice near *Boston, Lincolnshire*. They lay in a Bed of blue Clay. Mr. Morton.

f. 529. Another [A], in Stone; from the Cliffs, between *Skegness* and *Ingoldshels, Lincolnshire*.

f. 530. [A] *Southampton*.

f. 531. [A] An Impression of a Cockle of the same sort found with f. 424. at *Brompton, in Kent*, by Mr. Emmet, in sinking a Well. There happening to have been a lesser Cockle in the larger, the Stone exhibits an Impression of this also.

#### DIVISIO V.

*Pectunculi Figura subrotunda diversimode striati.*

f. 532. The several Striæ of this are disposed in such manner, as to form acute Angles on the middle of the Back of the Body, all parting towards the Margin of it. *Westall, near Burford, Oxfordshire*.

f. 532<sup>x</sup>. An Impression, made by a Pair of Bivalves of the same Species with the foregoing. The Shells were opened, and expanded when the Impression was made. *Woodston, Huntingdonshire*.

#### ARTICULUS II.

*Pectunculi Figura oblonga; quippe à cardine ad Marginem oppositum protensi.*

#### DIVISIO I.

*Sulcis & striis, à Cardine ad Marginem ductis.*

f. 533. *Weymouth*. Found in a Corn-Field, about a Mile and half from the Sea.

f. 534. Out of a Stone-pit near the River *Medway*, betwixt *Maidstone* and *Rocheſter, Kent*.

f. 535. Out of the same Stone-pit.

f. 536. Found on the side of a Hill near *Stokesley, Yorkshire*, with f. 472.

f. 537. *Broad-Rifington Fields, Gloucestershire*.

f. 538. *Burton on the Water, Gloucestershire*.

f. 539. *Stawell, Gloucestershire*.

f. 540. *Yanworth, Gloucestershire*.

#### DIVISIO II.

*Sulcis striisq; diversimode ductis, ex altera scilicet parte fasciatim dispositis, ex altera vero à Cardine ad Marginem procurrentibus.*

f. 540<sup>x</sup>. A Pair, very fair and entire, beat out of a Bed of Clay in a Cliff betwixt *Weymouth* and *Rodipole*, on the East-Side of a Gulph on the Shore there.

f. 540<sup>3</sup>.

f. 540<sup>a</sup>. From the same Place; where N<sup>o</sup> 608. *infra*, are also found.

f. 540\*. A Shell, of the same Species with the foregoing. Found near *Aldsworth, Gloucestershire*.

f. 540†. Another, of the same Species, but much less. Found in a Quarry at *Hampnet, Gloucestershire*.

f. 540. ✕. Another. From - - - *Northamptonshire*. Mr. Morton,

### ARTICULUS III.

*Pectunculi forma fere triquetra, laves.*

f. 541. *Tewkesbury, Gloucestershire*.

f. 542. From - - - - *Yorkshire*. Found on the top of a high Hill.

f. 543. *Werkton Stone-pit, near the Mill, Northamptonshire*.

f. 544, 545. *Sherborn North-Fields, Gloucestershire*.

f. 546, 547. *Stawell Gloucestershire*.

f. 548. *Northleach, Gloucestershire*.

f. 549. *Hampnet, Gloucestershire*.

### ARTICULUS IV.

*Bivalvis paribus testis, paucis ad Cardinem Dentibus Figura à Latere ad Latus oblonga.*

#### DIVISIO I.

*Altero Latere proterso, altero brevi, seu Cunei.*

#### SECT. I.

*Superficie sulcata, à Card. ad Marg.*

f. 550, 551. Found on the plough'd Lands, on the side of a Hill, near the Road from *Sherborn to Burton on the Water, Gloucestershire*. There were great Numbers of these in this Place. I observed of the same sort, and some of almost double this Size, in the Road near *Wansford, Northamptonshire*.

f. 552, 553. Two less, found along with f. 550, 551.

f. 554. *Heddington, Oxfordshire*.

f. 555. *Stow on the Wolds, Gloucestershire*.

f. 556. *Colnrogers, Gloucestershire*.

f. 557. *Farmington, Gloucestershire*.

f. 558. *Cheltenham, Gloucestershire*.

f. 559. A Stone, form'd in a *Cuneus*, with part of the Stone in which it was lodged. From *Absom, Gloucestershire*.

f. 560. Found near the Oxford Road to *Gloucester*, about 5 Miles from *Gloucester*.

f. 561. *Northleach, Gloucestershire*.

f. 562. *Sherborn, Gloucestershire*.

f. 563. *Heddington, Oxfordshire*.

f. 563\*. A Pair, small, very finely striated. Found in a Sand-Pit on the side of *Shooter's-Hill, Kent*.

SECT.

## S E C T. II.

*Cunei superficiei levi.*

The Shells of several of the Bodies ranged in this Class, are perished and gone; and only the Stones formed in them remain. These were formed by the *Insides* of the Shells, which sometimes are *smooth*, when the *Outsides* are *fulcated*; so that no certain Judgment can be made, without the Shells in which they were form'd, whether these be class'd rightly or not.

f. 564. *Windrush, Gloucestershire.*

f. 565. Found near *Great-Funtley, Hampshire.*

f. 566. From *Cumberland.*

f. 567, 568, 569, 570, 571. [A] *Whitby Allum-Mines*, along with the *Ammonites*, d. 51<sup>x</sup>. These are very like one sort of our River-Mussels.

f. 572, 573, 574, 575, 576, 577, 578. [A] Found in several places in the plough'd Fields about *Sherborn, Gloucestershire*. These have no Remains of the Shells on them, but seem to be form'd in Shells of the same sort with the foregoing from *Whitby*. There are of this Species found on *Yenson-Hill*, in *Hinckstridge* Parish, about 3 Miles from *Milburn, Somersetshire*.

f. 579. *Minster-Lovel, Oxfordshire.*

f. 580. *Rislington-Parva, Gloucestershire.*

f. 581. Found in the Road near *Pickering, Yorkshire*. There's an Impression of a Pecten on Stone adhering to it.

f. 582. Found in the same Road, near the former.

f. 583. Found loose on the side of a pretty high Hill, 2 Miles West of *Stokesley, Yorkshire*. There are Sparks of a *Mica* in it.

f. 584, 585. Two, small, of a Pearl-Colour. *Stifford, Essex.*

f. 585<sup>x</sup>. A Pyrites, form'd in a *Cuneus*, seeming to be of the same Species with that, f. 570. but much less, being probably form'd in the Shell of an Animal that was very young. Found, 60 Foot deep, in the great Clay-pit, *Richmond, Surrey*.

f. 586, 587, 588. Three Pairs. From the great Sand-pit on the East-Side of *Woolwich*. There are vast, and almost incredible Numbers of them here, as also of Oyster-Shells, and some other Bivalves, lying in a Stratum of Loam that is about 10 Foot thick, and is immediately under the Turf. Indeed there are such Multitudes of the Shells, especially of this Species, that in most parts of the Stratum they lie as thick and close as they possibly can, in Layers that are horizontal, parallel to each other, and to the great Stratum of Sand, that lies immediately underneath this Stratum of Loam and Shells. The whole has apparently the Face of a Sediment; and carries evident Marks of its having thus settled down out of a Fluid. There are of the same sorts of Shells lying in like manner in a Stratum of Loam, above a vast Stratum of Sand of vast extent. At the East End of *Woolwich*, and in all parts of *Black-Heath, Kent* and *Essex*,

f. 589,



f. 589, 590, 591. Stones form'd in the same Shells, with part of the Shell still adhering. From the great Sand-pit at the East-End of *Woolwich*.

f. 591<sup>x</sup>. Another, from the same Place. This is manifestly bended.

f. 592. Found in the River *Coln*, at *Compton* in the Hole, four Miles from *Randcomb*, *Gloucestershire*.

f. 593. Found at *Moreland*, on the River Side, *Westmorland*.

f. 594. *Bugthorp*, upon plough'd Lands. [A] This, and the two following, seem to be the *English* Shell describ'd by Dr. *Lister*, in his *Hist. Conch.* N° 247. under this Name, *Tellina fasciata, ex rubro variegata*. This (f. 594.) seems to be the same with the *Chamalites oblongus* *Aldrov. Mus.* L. 4. p. 836. N° 5.

f. 595. Near *Scarborough* *Spaw*, *Yorkshire*.

f. 596. Found on the Shore of *Scarborough*, *Yorkshire*.

f. 597. Found in a Brook, near *Lubenham*, *Leicestershire*.

f. 598, 599, 600. From *Whitton-Cliffs*, *Lincolnshire*. In these the Shell is gone, and succeeded by a sparry Crust of like Figure and Dimensions. That of *Aldrov. Mus.* p. 837. N° 2. seems to be of this sort. He calls it, *Chamites fasciatus*.

f. 601, 602, 603, 604, 605. *Ibid.*

f. 605<sup>x</sup>. [A] Two, of that Species which Dr. *Lister* has figur'd, *Hist. Conchyl.* L. 3. N° 267. under the Title of *Chama-Pholas angusta, parva, sinu utrinq; leviter muricato conspicua*. Out of a Clay-pit on the top of *Shooter's-Hill*, *Kent*.

### S E C T. III.

#### *Cunei superficiei fasciata.*

f. 606, 607. From ----- in *Northamptonshire*. There are likewise of these found along with f. 608. *infra*.

f. 608. Three Pair, and a single Shell, very fair, and intire, with Studs set in a fasciated Order; *i. e.* in Rings incircling the *Cardo*. Found on the Shore of the East-Side of a small Gulph betwixt *Weymouth* and *Rodipole*, being wash'd out of a Bed of Clay in the adjacent Cliff.

f. 608<sup>x</sup>. This is of the same Species; but the Shell is perished, and succeeded by a sparry Crust of like Figure and Dimensions. Found near *Bampton*, *Oxfordshire*.

f. 608<sup>a</sup>. This shews the Form of the Stone moulded in this kind of Shell. The Pores of the Shell appear to be saturated with Spar. Found with the foregoing.

f. 608<sup>b</sup>. Part of a Valve of one of the same Shells, from the same Place; having in the Inside of it two other Shells, of different kinds affix'd. By which it appears that the Fish had been for some time before dead, and gone.

f. 608<sup>c</sup>. Part of another. This, and the former, serve to shew the Form and Constitution of the *Cardo* of this kind of Shell.

f. 609,

f. 609, 610. Two Stones seeming to be form'd in Shells of the same Species which those f. 608. From a Quarry a quarter of a Mile North-West of *Morton, Lincolnshire*. These are call'd *Hippocephaloides* by Dr. Plot, Nat. Hist. Oxfordshire.

f. 611. Another Stone, of a Shape not so oblong as the preceding. *Portland-Quarry*. Of several Hundreds that I have seen of this sort, from this Quarry, this is by much the fairest. 'Tis indeed perfect and intire; and has upon it all the Lineaments of the Inside of the Shell express'd upon it with wonderful exactness.

f. 612. *Portland Quarry*.

f. 613. Another of the same kind, found on the top of an Hill on the West side of *Bath*.

f. 614. Found in the Parsonage Garden at *Southrey, Norfolk*.

f. 615. to 618 inclusive, being fill'd with the Matter of the common Pyrites, are dissolv'd and perish'd.

f. 619. In the great Quarry at *Barrington, Gloucestershire*.

f. 620, 621. *Ibid*.

f. 622. *Stroud, Gloucestershire*.

f. 623. *Sherborn, Gloucestershire*.

f. 624. *Ibid*.

f. 625. *Farmington, Gloucestershire*.

f. 626. *Hampnet, Gloucestershire*.

f. 627. *Sherborn, Gloucestershire*.

## DIVISIO II.

*Quarum utrumq; Latus à Cardine in longum protenditur,*  
*seu TELLINÆ.*

[A] f. 628, 629, 630, 631, 632, 633, 634. Found in several Places in the plough'd Lands about *Sherborn, Gloucestershire*, where they are very plentiful. The same Species are found in great numbers in a Stone-pit near *Moreton, Lincolnshire*. These are only Sand-stone, cast in a Shell which very much resembles one of our River Muscles, which Dr. Lister calls the *Musculus angustus citrinus*, N<sup>o</sup> 3. Hist. Conchyl.

f. 635. One adhering to a Mass of Stone, the exterior Shell is worn off, but the interior being fenced with Stone, is still preserv'd. *Cirencester, Gloucestershire*.

f. 636. *Charlton-Abbots, Gloucestershire*.

f. 637. *Stawell, Gloucestershire*.

f. 638, 639. *Sherborn, Gloucestershire*.

f. 640. *Burford, Oxfordshire*.

f. 641. *Sherborn, Gloucestershire*.

f. 642. *Hampnet, Gloucestershire*.

f. 643. *Northleach, Gloucestershire*.

f. 644. *Windrush, Gloucestershire*.

f. 645. *Stifford, Essex*.

f. 646. *Ibid*.

f. 647. Found six Fathom deep in sinking a Coal-pit, at Orton in Cumberland. Bishop Nicholson.

f. 648. Five from the Cliffs of Sheppey Island, Kent.

f. 649, 650, 651, 652. From the Cliffs by the Side of the Humber near Whitton, in Lincolnshire. These are nearly allied, if not of the same Species with f. 603. *supra*.

f. 653. Tangley, Oxfordshire.

### CLASSIS III. PARTIS III.

#### SECTIO III.

*Bivalvia Testis paribus ad Cardinum commissuram non dentata.*

#### ARTICULUS I.

*Figura oblonga à Cardine ad imum Marginem, sive Musculi.*

f. 654. Large Muscle found in the Banks of the River Welland, near little Bowden, Northamptonshire.

f. 655. Islip, Oxfordshire.

f. 656. Barrington, Gloucestershire.

f. 657. Burford, Oxfordshire.

f. 658. From a Stone-pit near the Mill at Werkton, Northamptonshire.

f. 659. Fullbrook, Oxfordshire.

f. 660, 661, 662, 663, 664. Found in the great Quarry at Barrington, Gloucestershire. They are blunter at the *Cardines* than ours, and seem to be a sort of *West-Indian* Muscle. They are found in great numbers and lying very thick, which indeed appears from the following Mass.

f. 665. Four of the same in a Mass of Stone from the same Place.

f. 666. Found in a Bed of Clay in Silphoe-Gills, Yorkshire.

f. 667. Stone-pit near Moreton, Lincolnshire. Mr. Morton.

f. 668. The Valves of this are distanced by Infusion of more stoney Matter than the Shells could contain. Fullbrook, Oxfordshire.

f. 669. A short thick Muscle. This seems to be another sort of *West-Indian* Muscle. Stroud, Gloucestershire.

[A] f. 670. This is a young Shell of our common *English* Sea-Muscle. Tangley, Oxfordshire.

[A] f. 671. Another still less of the same, younger, and less. Windrush, Gloucestershire.

f. 672. A small one, of the same kind with f. 660, from ----- Northamptonshire. Mr. Morton.

f. 672<sup>x</sup>. Three small Muscles seeming to be of that Species that Dr. Lister calls *Pholas Niger*, *India occidentalis*. *Hist. Conchyl. L.* 3. N<sup>o</sup> 268. These were found near Foscot, Oxfordshire.

f. 673. A long slender Muscle, from the Cliffs at Whitton, Lincolnshire. This is the *Virginia* Muscle. There was one of this Species in Mr. Banister's Drawings.

f. 674. Found on the plough'd Lands, on a Hill near Wheatlands-Mill, beyond Northleach, Gloucestershire.

f. 675. Hampnet Fields, Gloucestershire.

f. 675<sup>x</sup>. *Mytilus Pinniformis*. Out of the great Quarry at Barrington, Gloucestershire.

#### SECTIO IV.

*Bivalvia-Testis imparibus aliqua Parte semper hiantibus.*

##### ARTICULUS I.

*Figura longa, angusta, ejusdem ubiq; latitudinis, seu SOLENEs.*

[A] f. 676. A Piece of the English Solen, viz. *Solen major sub-fuscus rectus*. *Lif. Hist. Conchyl.* N<sup>o</sup> 255. Found near Southampton.

##### ARTICULUS II.

*Figura oblonga Telliniformi, seu Chama.*

f. 677, 678, 679. Near Southampton.

##### ARTICULUS III.

*Figura oblonga à Cardine ad imum Marginem qua Parte hiant, seu Pinna.*

f. 680. A Stone formed in a Pinna. From the great Quarry at Barrington, Gloucestershire.

f. 681. Part of a Pinna of a Pearl Colour, adhering to a Piece of the *Ludus Helmontij*. Clay-pit near Richmond Wells, Surrey. There are Fragments of other Shells that every where discover themselves in breaking the Stone. *vid. f. 434. supra.*

f. 682, 683. *Ibid.*

f. 684. Taken out of the 3d Stratum of a Quarry on the top of a pretty high Hill near Thornton, by Pickering in Yorkshire.

f. 685. Burford, Oxfordshire.

f. 686. Out of a Stone-pit near Ircheſter, Northamptonshire. Mr. Morton sent me this: and has since described this in his *Nat. Hist. of Northamptonshire*. p. 197. Tab. 3. Fig. 12.

#### CLASSIS IV.

*Multivalvia.*

##### SECTIO I.

*Ex tribus testis constantia.*

##### ARTICULUS I.

*Fig. ad Chamas accedente cum Testa tertia parva, valvis juxta Cardinem opposita, seu PHOLADES.*

g. 1. [A] *Pholas latus rugosus ex dimidio dorso & asper*. *Lif. Hist. Conchyl.* N<sup>o</sup> 279. This was found in Harwich Cliff. The same Species of Shell-fish is at this day found living at Sea, on the Northern Coasts of England.

g. 2. Another, of the same Species, but bigger. Chalk-pit, Lullingston Park, Kent.

## CLASSIS V.

### ECHINI.

See the Catalogue of the exotic Fossils, where this Distribution of the *Echini* is somewhat enlarged; by an Addition of a 2d Division to ART. II. of SECT. II. of the *Spatagi*, and a whole Genus under the Name of *Pentaphylloides*.

### PARS I.

*Duobus in Testa foraminibus, tuberculis exiguis & fere aequalibus in superficie donati, seu SPATAGI.*

### SECTIO I.

*Spatagi qui in uno latere sulcum insignem habent, Cordati aliquibus dicti.*

### ARTICULUS I.

*Foraminibus versus Latera positis, uno sub fissura, altero in Latere opposito.*

### DIVISIO I.

*Figura parum acuminata.*

*h. 1.* From the great Chalk-pit near Greenhithe, Kent. It lay near 60 Foot deep.

*h. 2.* Chalk-pit, Purfleet, Essex.

*h. 3.* Chalk-pit, Northfleet, Kent.

*h. 4.* Chalk-pit near Gravesend, Kent.

*h. 5.* Chalk-pit, by Greenwich.

*h. 6.* Chalk-pit, near Deptford.

*h. 6<sup>x</sup>.* This has on it a small Pecten, the Shell of a long slender *Vermiculus marinus*, and the Bases of several *Balani*. Charlton, Kent.

*h. 7.* A yellowish Flint moulded in a Shell of this Species. Gravel-pit near Islington.

*h. 8.* Another. Found in a Gravel-pit near Mitcham, Surrey, by Charles Dubois. The upper part of this has a Cavity in it with 5 Sinus's, so that the flinty Matter appears not to have reach'd to the top of the Shell [which in this Species is raised pretty high] wherein 'twas form'd, or to have taken an Impression of it, as those which are form'd in empty Shells have. This happen'd probably from the interposition of the Body of the Fish, not permitting the flinty Matter, entering, to approach that part of the Shell to which the Fish was annex'd. So that this Flint fell short of filling the Cavity of the Shell by all that Space which the Body of the Fish possess'd: and therefore as the Basis  
or



or lower part of the Stone has on it the Impression of the Shell, and exhibits the Form of it; the upper exhibits the Form of the contiguous Parts of the Fish.

## DIVISION II.

### *Figura Compressiore.*

- h. 9. Greenhithe, Kent.*  
*h. 10. Charlton, Kent.*  
*h. 11. Dartford, Kent.*  
*h. 12. Croydon, Surrey.*  
*h. 13. Rygate, Surrey.*  
*h. 14. Gravesend, Kent.*  
*h. 15. Deptford, Kent.*  
*h. 16. Purfleet, Essex.*  
*h. 17. Gravesend, Kent.*  
*h. 18. Northfleet, Kent.*  
*h. 19. Deptford.*  
*h. 20. Ibid.*  
*h. 21. Ibid.*  
*h. 22. Purfleet, Essex.*  
*h. 23. Greenwich, Kent.*  
*h. 23<sup>x</sup>. Northfleet, Kent.* This is the smallest I ever remember to have seen.  
*h. 24.* This hath parts of the Shells of the common *Vermiculus marin.* the *Vermiculus Nautiloides* [A] of Dr. Lister Hist. Conch. N<sup>o</sup> 5. a reticulated Film, found sometimes upon Sea-Shells, and usually supposed to be the Remains of the Vesicles of the Spat of some sort of Shell-fish; besides these, there are some Coralline Efflorescencies upon it. *Netlebed, Oxfordshire.*  
*h. 25.* This hath parts of the Shell of a sort of Oyster sticking to it in several places. From - - - - in *Hertfordshire.*  
*h. 26.* This hath part of one of those Shells, pretty big, upon it. *Croydon, Surrey.*  
*h. 27. Purfleet, Essex.* This hath several of the *Vermiculi Nautiloides* of Dr. Lister. Hist. Conchyl. sticking to it. *vid. h. 24. supra.*  
*h. 27<sup>x</sup>. Gravesend.* This is compress'd, so as to part the Plates, and burst open several of the Sutures. *vid. h. 40. infra.*  
*h. 28.* A Shell cut in two, to shew the inside of it. There adhere to the outside, Spat, and the *Vermiculi Nautil.* *vid. h. 24. Northfleet, Kent.*  
*h. 29.* Chalk cast in the Shell of an Echinus, and shewing the Lineaments of the Shell very finely. *Fetcham, near Leatherhead, Surrey.*  
*h. 30.* A Shell, from *Northfleet*, broken, shewing the Flint wherewith 'tis quite fill'd, in such sort as to demonstrate 'twas as fine and thin as melted Metal, and is run in the Shell as in a Mould.  
*h. 31.* Another immers'd in a black Flint: and broken so as to shew its Cavity fill'd with Flint. *Croydon, Surrey.*  

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*b. 32.* Another also fill'd with Flint, and having Flint adhering externally to it. This Shell is much compress'd, broken, and its parts displac'd. *Charlton, Kent.*

*b. 33.* An Echinites, form'd in the Shell of an Echinus Spatagus, of the Sort, and much of the Size of that *b. 15. supra.* very fair and perfect, having taken off all, even the finest Lineaments, of the Shell wherein it was cast and moulded. The Flint within appears to have been continued thorough one of the natural Apertures of the Shell, in such quantity as to have environ'd the Shell, and taken an Impression of the outside of it, with not less exactness. Betwixt the exterior and interior Flint is a Space, or Interval, equal to that of the Shell, that made these Impressions, which Shell in tract of time perish'd, and is now quite disappear'd. *Lullingston-Park, near Ainsford, Kent.*

*b. 34.* A Stone form'd in the Shell of an Echinus Spatagus, and inclosed in a flinty Pebble. The Shell seems not to have been entire; but where it was, there appears a Vacancy between the Echinite and Flint, answering to the dimensions of the Shell. Found in a Gravel-pit near *Gravesend.*

*b. 35.* A Piece of the same flinty Pebble, having on it the Impression of part of the outside of the Shell.

*b. 36.* Another Echinite adhering to a grey Flint, near *Henly*, 4 Miles from *Ipswich, Suffolk.*

*b. 37.* Another adhering to a black Flint. *Oak of Honour Hill*, beyond *Peckham, Surrey.*

*b. 38.* Another, found upon *Banslead Downs, Surrey.* There appears in this too an Interstice, between the Echinites and the Flint, of the thickness of the Shell.

*b. 39.* An Impression of part of the outside of this Species of Echinus upon a greenish Flint. *Richmond-Park, Surrey.*

*b. 40.* An Echinite or Flint, form'd in an Echinus compress'd, crack'd and opening at the Sutures in several Places, found among the Gravel in the Street, near *Wadham Colledge, Oxford.* The Shell in which this was form'd, was in much the same Condition with that *b. 27<sup>x</sup>.*

*b. 40<sup>x</sup>.* Another also compress'd. Found on the Downs near *North Tudworth, Wiltshire.*

*b. 41.* Another of a brown flinty Pebble, the Impression and Lineaments of the Shell appearing plain and distinct, and even the very Sutures of the Shell. Out of the great Gravel-pit on the East side of *Hyde-Park.*

*b. 42.* Another of a yellowish brown Flint. *Harrow on the Hill, Middlesex.*

*b. 42<sup>x</sup>.* Another, of a grey Flint. Found in a Gravel-pit near *Greenwich.*

*b. 43.* Another of a dusky yellow Flint, very perfect and fair. Near *Islington-Wells.*

*b. 43<sup>x</sup>.* Another. *Hitchin, Hertfordshire.*

*b. 44.* Another. *Enford, Wiltshire.*

*b. 45.*

- h. 45. Another. *Kensington* Gravel-pits.  
 h. 46. Another. *Barkhampstead*.  
 h. 47. Another of a black Flint, very perfect and fair. *Boxhill*, in *Surrey*.  
 h. 48. Another of a light grey Flint. *Henly* upon *Thames*.  
 h. 49. Another, found in the Fields near *Eyton Bray*, in *Bedfordshire*.  
 h. 49<sup>x</sup>. Another, very small, near *Highgate*, *Middlesex*.  
 h. 49<sup>\*</sup>. Another. *Newington*, *Surrey*.  
 h. 49<sup>†</sup>. Found on the Downs near *North-Tudworth*, *Wiltshire*.  
 h. 49<sup>✱</sup>. Parts of the Shell of an *Echinus Spatagus*, with Shoots of Crystal on the inside, set in Rows, parallel to the Sutures of the Shell in a very regular and beautiful manner. Out of a Chalk-pit, on the Downs, near two Miles from *Croydon*, *Surrey*.  
 h. 49<sup>‡</sup>. This is of a Species quite different from any of the precedent; it having the Sulcus at the end shallower: and the five oblong Depressions observable in those, are wanting here, and the Shell smooth at top. *Cherry-Hinton* Chalk-pit, near *Cambridge*.

## ARTICULUS II.

*Spatagi Cordiformes uno foramine in media fere basi, altera in ipsa fissura posito.*

- h. 50. A small yellow one. *Witney*, *Oxfordshire*.  
 h. 51, 52. Two of a grey Colour. *Barrington*, *Gloucestershire*.  
 h. 53, 54. Two, yellow, from the Stone-pit upon *Cowley-Common*, near *Oxford*.  
 h. 55. Found in the Fields near *Heddington*, by *Oxford*.  
 h. 56. *Farmington*, *Gloucestershire*.  
 h. 57. *Winchcomb*, *Gloucestershire*.  
 h. 57<sup>x</sup>. *Biffeter*, *Oxfordshire*.  
 h. 58. Plough'd Lands on the Edge of *Clarkendown*, near *Bath*.  
 h. 59. *Windrush*, *Gloucestershire*.  
 h. 60. A large flat Echinites. Found in a Stone-pit between *Earnham* and *Afleby* in *Lincolnshire*. Mr. Morton.  
 h. 61. Another, larger, of a brown Colour, not so flat as the preceding. Found in that part of *Tangley* Fields which is called *Tangley-bottom*, near *Burford* in *Oxfordshire*. This is the *Bronzia* or *Ombria* of Dr. Plot. Nat. Hist. of *Oxfordshire*, p. 90. Tab. 2. Fig. 9, 10.  
 h. 61<sup>x</sup>. *Fullbrook-Field*, near *Burford*, *Oxfordshire*.  
 h. 61<sup>†</sup>. *Northbleach-Field*; where they are found plentifully: as also in the adjacent Parts, of *Oxfordshire* and *Gloucestershire*, for several Miles round, upon the plough'd Lands. This shews the Form of the inside of the Shell, and the Matter 'twas fill'd with; amongst which are great numbers of Ova of Fishes.  
 h. 61<sup>‡</sup>. *Witney*, *Oxfordshire*. I found the like at *Arlington*, near *Byberry*, *Gloucestershire*.

## SECTION II.

*Spatagi nullo sulco ad latera donati, utrisq; foraminibus in  
basi Testa.*

## ARTICULUS I.

*Altero foramine in ipso Basis Margine, altero versus oppositum mar-  
ginem suis Galeati aliquibus dicti.*

I have observed the Echini of this Class of all Sizes, from one Inch  $\frac{1}{2}$  length in the Basis to three Inches. There is something of a Difference in the Shape of several of these; some being flatter on the top, others more copped; but the Differences do not seem to be so great as to imply that they are of distinct Species. Some of them are fill'd with Chalk; others with Flint.

*h. 62.* A galeated Echinus. Out of the great Chalk-pit, at *Northfleet, Kent.*

*h. 63.* *Purfleet, Essex.*

*h. 64.* *Netlebed, Oxfordshire.*

*h. 65.* *Chislehurst, Kent.*

*h. 66.* *Croydon, Surrey.*

*h. 67.* *North-Tudworth, Wiltshire.*

*h. 68.* *Gravesend, Kent.*

*h. 69.* *Rygate, Surrey.*

*h. 70.* *Greenhithe, Kent.*

*h. 71.* *Charlton, Kent.*

*h. 72.* *Marlborough Downs.*

*h. 73.* *Deptford.*

*h. 74.* From - - - - betwixt *Southampton* and *Portsmouth.*

*h. 75.* *Greenwich, Kent.*

*h. 76.* A galeated Echinus almost wholly fill'd with a dark grey Flint, found in sinking a Well at *Sarret*, a Village 5 Miles from *Watford* in *Hertfordshire.* It lay 26 Fathom deep in the Chalk, on an Hill. 'Tis compress'd and somewhat broken.

*h. 77.* Another, which shows the Sutures very distinctly on the Basis. *Greenhithe, Kent.*

*h. 78.* Another having parts of Vermiculi, and some other Shells affix'd to it, and a good number of the Remains of the Spar of some Shell-fish, vid. *h. 24.* *Northfleet, Kent.*

*h. 79.* Another with several bottoms of small Balani on it. *Croydon, Surrey.*

*h. 80.* Another with parts of some Bivalve adhering, which are probably a sort of the *Ostrea Arborescens*: and some small Coralline Efflorescencies. *Chislehurst, Kent.*

*h. 81.* Another with part of a large Bivalve of the same kind, and three Efflorescencies of Coral. They are round,  $\frac{3}{4}$  of an Inch in Diameter, and the Striae appear plainly in them running from the Circumference to the Center, as in many sorts of Coral. *Greenwich, Kent.*

*h. 82.* Another with some Vermiculi and the flat Shell of a small Pecten adhering to it. *Croydon, Surrey.*

*h. 83.* A piece of another with several Vermiculi upon it. *Ibid.*

*h. 84.* A Shell of this kind, cut in two, to shew the inside. *Northfleet, Kent.*

*h. 85.* A piece of a larger with the flat Shell of an Oyster upon it, and some Remains of Spat. *Greenhithe, Kent.*

*h. 86.* Another broken to shew the Chalk contain'd in it. *Ibid.*

*h. 87.* Another broken, so as to discover it to be quite fill'd with Flint. It has the flat Shell of a small Pecten and the Bottoms of several Balani upon it: as also a Body flat and round, about  $\frac{3}{4}$  of an Inch over, and very beautiful, striated from the Center to the Limbus, like the Porpita, and appear to be of like Original. *Deptford.*

*h. 87<sup>x</sup>.* A Shell of the same Species with the precedent: having a like striated coralloid Body upon it, very fair. *Northfleet, Kent.*

*h. 88.* Another fill'd quite full with Flint, so as to run out at both the Foramina: and has besides a pretty big Mass of Flint concreted on the outside at the top of the Shell. It has Spat, the bottoms of Tree-Oysters and slender ramose coralline Efflorescencies upon it. *Deptford.*

*h. 88<sup>x</sup>.* A galeated Echinus, of a Species different from all the foregoing, being copped, and in shape somewhat more conic than any of those. Indeed those differ considerably from each other in Shape, as do also the Echinitæ or Flints, *h. 92. & seq.* that were form'd in like Shells; some being of a compress'd, others of a round Figure, some squat or depress'd, others rais'd. This was taken forth of a Chalk-pit, near *Norwich*. The Echinites, *h. 91.* so nearly resembles this in Shape, that it probably was form'd in a Shell of this Species.

*h. 89.* The Impression of part of the Shell of an Echinus of this kind, in which the Sutures appear very plainly; taken out of a Gravel-pit near *Greenhithe, Kent.*

*h. 90.* An Echinites, consisting chiefly of a grey Flint, but towards the top of Crystal, finely wrought and cancellated. Given me by Sir *G. Wheeler*. 'Twas found upon an Hill, amongst other Flints near *Charing* in *Kent*, in the midway betwixt *Maidstone* and *Canterbury*.

*h. 91.* An Echinite, very large, beautiful and perfect, having taken the Impression of all parts of the Shell and even of the Sutures very distinctly. [*Conf. N<sup>o</sup>. h. 88<sup>x</sup>. supra.*] Found in a Gravel-pit in *Hyde-Park*.

*h. 92.* Another less. I found this not far from *Marlborough*; and observed others of this sort, and about this size, in several of the Downs of *Wiltshire*.

*h. 93.* Another. From the Gravel-pits at *Greenhithe, Kent.*

*h. 94.* Another. *Henley* upon *Thames*.

*h. 95.* Another. Gravel-pit, near *Islington Wells*.

*h. 96.* Another. *Banstead-Downs, Surrey.*



*h. 96* \*. Another found in a Gravel-pit, at *Busb-Hill*, near *Enfield*, *Middlesex*.

*h. 97*. Another from *Box-hill*, in *Surrey*.

*h. 98*. Another found in the Fields near *Eyton Bray*, *Bedfordshire*.

*h. 99*. Another. *Eltham*, *Kent*.

*h. 100*. Another from *Netlebed*, *Oxfordshire*.

*h. 101*. Another, *Marybone*, *Middlesex*.

*h. 102*. Another, near *Lee*, on the Edge of *Black-Heath*, *Kent*.

*h. 103*. Another, a Gravel-pit near *Chelsea-College*.

*h. 104*. Another. *Hopwell*, *Derbyshire*.

*h. 105*. Another, *Ockbrook*, *Derbyshire*.

## SECTIONIS II. ARTICULUS II.

*Spatagi altero foramine in Basis centro, altero in margine.*

### DIVISIO I.

*Figura ad Conoidem accedente, Pileati aliquibus dicti.*

Some of these are higher, and more copped or acuminate: other lower, and more round. They are of different sizes from near two Inches to  $\frac{1}{2}$  of an Inch in height. Some of them are fill'd with Chalk, others with Flint.

*h. 106*. A pileated Echinus, taken up, with different Shells of several kinds, Sharks Teeth, and other marine Bodies, in a Stratum of Chalk above 50 Foot deep, near *Greenhithe*, *Kent*.

*h. 107*. *Croydon*, *Surrey*.

*h. 108*. *Deptford*.

*h. 109*. *Northfleet*, *Kent*.

*h. 110*. *Ibid*.

*h. 111*. *Rygate*, *Surrey*.

*h. 112*. *Purfleet*, *Essex*.

*h. 113*. *Netlebed*, *Oxfordshire*.

*h. 114*. *North Tudworth*, *Wiltshire*.

*h. 115*. *Greenwich*, *Kent*.

*h. 115* \*. An Echinus with a reticular Accretion upon it, extremely fair. Whether this be the Spat of some Shell-fish, or an Alga: or a coralloid Body, I cannot tell; but 'tis at this day found also upon the Shells at Sea.

*h. 116*. Another, full of Flint, with Flint adhering outwardly to the Hole in the Centre at the Base. It was a very large piece of Flint; but being of no Use, I broke most of it off. Out of the great Chalk-pit, on the edge of *Black-Heath* near *Deptford*.

*h. 117*. Another, with the flat Shell of a Pecten adhering to it. *Northfleet*, *Kent*.

*h. 118*. A pileated Echinus cut in perpendicular, and emptied of the Chalk, to shew the Inside of it. *Greenwich*, *Kent*.

*h. 119*. Another, cut horizontally. *ibid*.

*h. 120*. Another. *Croydon*, *Surrey*.

*h. 121*. Another. *Charlton*, *Kent*.

*h. 122. Northfleet, Kent.* This, and the following, to 133, are not quite so rais'd and conical as the foregoing.

*h. 123. Gravesend, Kent.*

*h. 124. Ibid. h. 124<sup>x</sup>. Purfleet, Essex.*

*h. 125. Ibid.*

*h. 126. Rygate, Surrey.*

*h. 127. North Tudworth, Wiltshire.*

*h. 128. Northfleet, Kent.*

*h. 129. Croydon, Surry.*

*h. 130. Chislehurst, Kent.*

*h. 131. Marlborough Downs, Wilts.*

*h. 132. Northfleet, Kent.*

*h. 133. Ibid.* broken to shew the Flint included.

*h. 134. Deptford.* This, and the following, to 139<sup>x</sup>, are still lower and rounder, seeming to be of a different Species.

*h. 135. Croydon, Surry.*

*h. 135†. Greenwich, Kent.*

*h. 135\*. Purfleet, Essex.*

*h. 136. Out of a Chalk-pit on Marlborough-Downs, Wilts.*

*h. 137. Deptford.*

*h. 138. Rygate, Surrey.*

*h. 139. Gravesend, Kent.*

*h. 139<sup>x</sup>. Northfleet, Kent.*

*h. 140.* A large piece of a Shell, partly immers'd in a Black Flint, and partly fill'd with the same. From the great Chalk-pit at *Northfleet, Kent.*

*h. 140<sup>x</sup>.* A Shell of this pileated Kind, somewhat compress'd and crack'd, fill'd with black Flint, and having a Mass of the same, adhering at one of the Holes of the Shell to the outside of it in such manner, that the Flint within is contiguous with that without the Shell. *Northfleet.*

*h. 141.* Another, immers'd in a flinty Pebble. The inside of this Shell is seen. Found near the mineral Wells on *Sydenham Common.*

*h. 142.* An Impression of the Basis of an *Echinus pileatus*, very fair, and distinct in a yellow Flint. Near *Deptford.*

*h. 143.* A small Echinite of the same sort with those 122, &c. to 131. having curiously taken off the Lineaments of the inside of the Shell, found lying loose in a Cavity in the middle of a grey flinty Pebble; which Cavity throws also the Lineaments of the outside of the Shell. Found in a Gravel-pit near *Gravesend, Kent.*

*h. 143<sup>x</sup>.* The Shell of a pileated Echinus, of a ferruginous Complexion, with Parts of the Pyrites growing upon it, in five double Lines, upon the five linear Commissures of the Shell, where 'tis perforated with small Holes standing in Rows. There are also other-like linear Accretions of the Pyrites that intersect the former; these probably attending Cracks that happen'd to be in the Shell. There appears an ochreous Matter at the two Holes: but,

by its Weight, the Shell seems to be fill'd with the Pyrites. This very great Curiosity was found in the Chalk-pit by *Greenhithe*; in which Pit Pyritæ of the like Constitution, and this ferruginous Complexion, are commonly found. See that exhibited in the former Part of this Catalogue, N<sup>o</sup> *h. 3.*

*h. 144.* An Echinite, consisting of a white flinty calculous Matter. Found in a Gravel-Pit on *Mitcham-Common, Surrey.*

*h. 145.* This has some degree of Diaphaneity, and approaches the Constitution of an Agate. Gravel-pit, near *Hampstead Town.*

*h. 145<sup>x</sup>.* An Echinite of a dark grey Flint; towards the top is an Hollow that appears to be made by the Shell's being press'd in by some external Force. Found on the Downs near *North-Tudworth, Wiltshire.*

*h. 146.* Another, of a dark brown Colour. *Walthamstow, Essex.*

*h. 147.* Another. Found on the West-side of *Mill'd-Hill, near Hendon, Middlesex.*

*h. 148.* Another. *Bromley, Kent.*

*h. 149.* Another, of white Flint. *Henley upon Thames.*

*h. 150.* Another, of red Flint. *Chislehurst, Kent.*

*h. 151.* Another, of a dark brown Flint. Found upon the Hill near the Observatory in *Greenwich-Park.*

*h. 152.* Another. *Hornsey-Wood, Middlesex.*

*h. 153.* Another. This appears not to have fill'd the Shell, but has pretty large Cavities on several parts of it, as if the Fish, or Parts of it, were interpos'd betwixt the Shell and the Flinty Matter entering of it, whilst in Solution. *Barkhamslead, Hertfordshire.*

*h. 154.* Another. On the top of which is a Cavity, with five Sinus's radiating out, at equal distances from it. Possibly the Fish of this Species of Echinus, may have been of a stellar Figure. And if shrivell'd, or forced up into a small compass, being interposed at the top of the Shell, the Flint entering it, would have such a Cavity at top, as is observable in this. *Cane-Wood, betwixt Hampstead and Highgate.*

*h. 155.* An Echinite of a brown Flint, appearing to be cast in a Shell of the same sort with that *h. 122.* *Stoke-Newington, Middlesex.*

*h. 156.* Another. *Richmond, Surrey.*

*h. 156<sup>x</sup>.* From ----- in *Suffex.*

*h. 157.* Another. *Kentish-Town, Middlesex.*

*h. 158.* Another. *Harrow on the Hill, Middlesex.*

*h. 159.* Another. *Lullingston-Park, near Ainsford, Kent.*

*h. 160.* Another, of a grey Flint, of a rounder Figure than any of the former; and appearing to have been cast in a Shell of the same sort with that *h. 134.*

*h. 161.* Another. *Netlebed, Oxfordshire.*

*h. 162.* Another. Found in the Fields near *Eyton-Bray, Bedfordshire.*

*h. 162<sup>x</sup>.* Another. From *Great-Bowdon, Leicestershire.*

*h. 163;*

- h. 163. Another, of a dark brown Colour. *Enford, Wiltshire.*  
 h. 164. Another. *Hitchin, Hertfordshire.*  
 h. 165. Another. *Banstead-Downs.* I found one very like this on plough'd Lands, near *Watford, Hertfordshire.*  
 h. 166. Another, of a whitish Flint. *Thorp, Northamptonshire.*  
 h. 167. Another. Near *Fulham, Middlesex.*

## ARTICULI II. DIVISIO II.

*Spatagi Figura magis compressa, seu Discoides.*

- h. 168. A large Echinus, near 2 Inches in Diameter, and  $\frac{3}{4}$  of an Inch high. On plough'd Lands, near *Woodstock, Oxfordshire.*  
 h. 168\*. Another, with the Basis somewhat less. *Witney, Oxfordshire.*  
 h. 169. Another, with the Basis still less, it being but an Inch and  $\frac{1}{4}$  in Diameter; but the convex Part is raised somewhat higher than the Convex of that.  
 h. 170. Another, of the same Species with the last, but less. *Aulsworth, Gloucestershire.*  
 h. 171. Another, still less. *Cowley-Common, Oxfordshire.*  
 h. 172. Another, less. *Sherborn, Gloucestershire.*  
 h. 173. Another, less. *Ibid.*  
 h. 174. Another, less. *Over-Slougher, Gloucestershire.*  
 h. 175. Another, less. Found along with *Cornua Ammonis, Concha Anomia*, and other Shells, near *Silverton, Devonshire.*  
 h. 176. Another, less. *Garlington, Oxfordshire.*  
 h. 177. Another, less. *Hampnet, Gloucestershire.*  
 h. 177\*. An Echinite of Flint, black, with a Cast of yellow. Found near *Norwich.*

## CLASSIS V. PARS II.

*Echini uno tantum foramine præditi, Tuberculis majoribus & inæqualibus, seu OVARIJ.*

- h. 178. An Echinus, 2 Inches in Diameter. From the Chalk-pits at *Greenhithe.* 'Tis full 2 Inches in breadth, and but  $\frac{1}{2}$  an Inch in height; and consequently is somewhat flatter than the *Echinus Ovarius*. Found now on the *English* Coasts. The Tubercula in this are also larger than those of the *English* Echinus Ovarius.  
 h. 179. Another, from the Chalk-pit at *Deptford.* This is not of quite so compress'd a Figure as the former, and so more nearly approaches the Figure of the *English* Echinus Ovarius.  
 h. 180. Another, with part of a Bivalve, and a little Spat upon it. Found in the great Chalk-pit at *Northfleet.*  
 h. 181. Another. *Northfleet.* This has a Spike along with it, which is smooth: and in all probability this kind of Spike belongs to this Species of Shells. *Conf. h. 210\*. & h. 226. infra.*  
 h. 182. Another, depress'd by some external Force, so as to make a large Sinus on one side. *Deptford.*

*b.* 183. Another, full of Flint. Chalk-pit at *Northfleet*.

*b.* 183<sup>x</sup>. Another, full of Flint, and immers'd in Flint. From the Chalk-pit at *Greenhithe*.

*b.* 184. Another, from the same Place, full of Flint. The Flint too that, while in Solution, fill'd it, having run over, and so hanging forth a good way beyond the Shell, till broken off. *Purfleet, Essex*.

*b.* 185. Another, having several of the Spines actually upon it, with more lying by in the Chalk: besides several others that were shook off in the clearing away the Chalk. From *Greenhithe, Kent*.

*b.* 186. Another, fill'd with Chalk, with a Congeries of small long Bodies appearing in the Chalk, at a Hole on the upper Part of the Shell. These Bodies seem to be some of the little Bones found in this Fish, and which are usually call'd its Teeth, and lie also in this part of the Shell. *Croydon, Surrey*.

*b.* 187. Another, fill'd with Chalk. *Ibid*.

*b.* 188. Another, empty'd, so as to shew the interior Constitution of the Shell. *Ibid*.

*b.* 189. Another, with the Teeth mentioned, *b.* 186. *Greenhithe, Kent*.

*b.* 190. Another. Found near the Surface, in a Quarry near *Farmington-Grove, Gloucestershire*.

*b.* 191. Another, found lying amongst Rubble-Stones, under the Turf, near *Sherborn, Gloucestershire*.

*b.* 192, 193. Two small ones; the one fill'd with Flint, the other with Chalk. *Greenwich, Kent*.

*b.* 194. Another. From the Chalk-pit at *Northfleet*.

*b.* 195. Two others, very small. *Ibid*.

*b.* 196. Another small one, found amongst Rubble, over a Quarry of Stone near *Woodstock, Oxfordshire*.

*b.* 197. Four small ones, from a Stone-pit on *Cowley-Common*, near *Oxford*.

*b.* 198. An Echinus, fill'd with Stone. This more nearly resembles our common Echinus. *Stow on the Wolds, Gloucestershire*.

*b.* 199. Another. *Burford, Oxfordshire*.

*b.* 200. A small one; but having the Tubercula larger, for the Size of the Shell, than any of the former. 'Tis fill'd with Stone, among which appear some of the Teeth. *Vid. b.* 186. *Barrington, Gloucestershire*.

*b.* 201. Another. *Shot-over-Hill*, near *Oxford*.

[A] *b.* 202. A small one, of the common *English* sort. *Sherborn, Gloucestershire*.

*b.* 203, 204. Two more, of the same Size with the precedent, but worn smooth. *Tangley, Oxfordshire*.

*b.* 205. Another less. *Ibid*.

*b.* 206. A Piece of a Shell, kept to shew the interior Constitution of it, and how exactly the Flints, cast in this kind, have been moulded by it. *Deptford*.



*h. 207.* An *Echinus Ovarius*, of a Species different from all the precedent, being more raised, and of a Figure more globose: The Plates and Papillæ are larger likewise. There are two of the Spines in the Chalk along with it. From *Greenhithe-Chalk-Pits, Kent.*

*h. 207\*.* Part of another, of the same Species, but somewhat less. Found about 60 Foot deep, in the great Chalk-Pit, *Purfleet, Essex.*

*h. 207\*.* Part of another, larger. *Croydon, Surrey.*

*h. 208.* Seven Plates of the Shells of *Echini*, of the same Species with the foregoing, parted at the Sutures, with the Papillæ upon 'em, all large. From the Chalk-Pits of *Purfleet, Greenhithe, and Northfleet.*

*h. 209.* A Plate and a Shell of the same Species, larger than any of the former. From a Quarry half a Mile North-West of *Clipston, Northamptonshire.* Mr. Morton.

*h. 210.* Five Plates, of Shells of still the same Species. From ----- *Northamptonshire.* Mr. Morton.

*h. 210\*.* Three Plates of a Shell of a different Species, very rare. *Greenhithe Chalk-Pits.*

*h. 210†.* Part of a Shell of an *Echinus*, different from all the foregoing. *Greenhithe, Kent.*

*h. 210\*.* The Shell of an *Echinus Ovarius*, of the same kind with that *h. 181.* having several smooth Spikes lying in the Chalk along with it. *Greenhithe.*

*h. 211.* Parts of a large Shell, of the same Species with *h. 207.* broken, and lying in a Mass of Chalk, along with several Spines that are thick set with Rows of small Knobs; which probably are the Spines that belong to this Species. *Greenhithe, Kent.*

*h. 212.* A large Spike, with several lesser, in Chalk. *Purfleet, Essex.*

*h. 213.* Several small smooth Spikes, in Chalk. *Charlton, Kent.*

*h. 214.* A Spike of an *Echinus*, of the same sort with those called *Lapides Judaici*, swelling from a short Stalk into a large Knob. Found in a Gravel-pit in *St. George's-Fields.*

*h. 215.* Several short, crabs, round Spikes, of different Sizes and Figures. From the Chalk-pits of *Essex, Kent, and Surrey.* There are of these tumid Spikes found, in plenty, near *Wooton-Basset, Wiltshire.*

*h. 216.* A very large Spike. From *Cowley-Common, near Oxford.*

*h. 217.* A less, on Stone. *Broadwell-Grove, Oxfordshire.*

*h. 218.* Two on a Stone, along with several Bivalves. *Sherborn, Gloucestershire.*

*h. 219.* A small, slender, smooth one, on Stone. *Windrush, Gloucestershire.*

*h. 220.* A very fair one, large, near 2 Inches and  $\frac{1}{2}$  long, thick set with Knobs in Rows; with part of the Chalk wherein 'twas found lodg'd. At the Depth of above 40 Foot, in the great Chalk-pit at *Purfleet, Essex.*

*h. 221.*

*h. 221.* Another. *Ibid.*

*h. 222.* Another, different. *Gravesend, Kent.*

*h. 223.* Several, of different Sizes, swelling a little towards the Middle. From the Chalk-pits of *Essex, Kent, and Surrey.*

*h. 224.* Several others, of near the same Thickness for their whole Length. Out of the same Chalk-pits.

*h. 225.* Others, of different sorts; from the Stone-pits of *Gloucestershire, Oxfordshire, and Northamptonshire.*

[†] *h. 226.* Others smooth and slender, of near the same Thickness throughout. These belong to that Species of *Echinus* that is exhibited, *h. 181. & h. 210\*.* *Deptford.*

*h. 227.* A small *Echinus*, fill'd with Flint, and part of it immers'd in a Mass of Flint, which was very large; but what remains was struck off from the rest. *Croydon, Surrey.*

*h. 228.* An *Echinite*, consisting of a brown Flint, cast in the Shell of an *Echinus Ovarius*, of the same sort with *h. 178.* but somewhat less. *Shooter's-Hill, Kent.* By comparing this with *h. 188. & h. 206.* 'twill appear how exactly it answers to the Inside of that Species of *Echinus*, in which it appears to have been cast and moulded.

*h. 229.* Another, of a yellowish Flint, but less. *Peckham, Surrey.*

*h. 230.* Another, less, immers'd in a yellow Flint. Round the *Echinite* is a Vacancy answerable to the Dimensions of the Shell. Found on the Downs near *Croydon.*

*h. 231.* Another, less. *Finchley-Common, Middlesex.*

*h. 232.* Another. *Harrow-on-the-Hill, Middlesex.*

*h. 233.* Another. *Stretham, Surrey.*

*h. 234.* Another. *Cashalton, Surrey.*

*h. 235.* Another, of a dark brown Colour. *Mitcham-Common.*

*h. 236.* An *Echinite*, of still the same sort, of a greenish Flint, not above the bigness of a Vetch; found, in breaking a large Flint, inclos'd in the middle of it. *Barkhamstead, Hertfordshire.*

*h. 237.* A flinty Pebble, having on it an Impression of part of the Shell of an *Echinus Ovarius*, with Impressions of eleven tumid *Aculei*, of that sort which pass ordinarily by the name of *Lapis Judaicus*, surrounding the Impression of the Shell, having all their Apices from it, and their Heads towards it, in such manner, that the *Aculei* seem to have belong'd to, and been affix'd on to the Shell that made the Impression in the midst of them. Found in a Gravel-pit near *Copenhagen-House*, besides *Islington, Middlesex.*

*h. 238.* A fair Impression, of part of a Shell of a very large *Echinus Ovarius*, on an Agate; found in Mr. *Heart's* Park at *Lullingston*, near *Ainsford* in *Kent.*

*h. 239.* An Impression of part of a Shell of an *Echinus* of that sort, *h. 207.* on a grey Flint. A little beyond *Highgate, Middlesex.*

*h. 240.* Another; from ----- in *Huntingtonshire.* Mr. *Morton.*

*h. 241.* Another. *Kingsland, Middlesex.*

*h. 242.* An Impression of a single Plate of a Shell of the same Species, taken off with great Exactness. 'Tis on a grey Flint. *Hamptstead-Heath.*

*h. 243.*

*b. 243.* An Impression of part of a Shell of still the same sort, and of a Spike belonging to that sort too; being of the same with those *b. 223.* Upon brown Flint. Among Gravel, near *Northfleet, Kent.*

*b. 244.* An Impression of a Plate, and Spike, also of the same Species still, on a dark brown Flinty Pebble. *Hampstead-Heath.*

*b. 245.* An Impression of a long, round, scabrous Spike of that sort, *b. 224.* Found, upon breaking a Flinty Pebble, inclos'd in the Mass of it. Gravel-pit, near *Gravesend, Kent.*

*b. 246.* An Impression of another less, in the middle of a flinty Pebble, variegated with yellow, grey, &c. Gravel-pit near *Greenhithe.*

*b. 247.* Another like Impression, on a brownish flinty Pebble. *St. George's-Fields, Southwark.*

*b. 248.* Another, more slender, on a coarse grey Pebble. *Hampstead-Heath.*

*b. 249.* An Impression of a pretty large Spike of the same sort, on a brown flinty Pebble. This Spike appears to have been broken, and inflected, when it made this Impression. *Dartford, Kent.*

*b. 250.* An Impression of a thick short Spike, much resembling one of those, *b. 215.* on a greyish Flint. In Gravel, near *Hackney, Middlesex.*

*b. 251.* Another. *Downs, not far from Epsom, Surrey.*

*b. 252.* Another, on a yellowish flinty Pebble. *St. George's-Fields, Southwark.*

## CLASSIS VI.

*Corpora quaedam Echinis, ut videtur, affinia.*

*i. 1.* A pentagonal Body, compos'd of two Rows of small Joints. Chalk-pit at *Northfleet, Kent.*

*i. 2.* Several Parts and Joints of the same. From the same Place.

*i. 2<sup>x</sup>.* Part of a like pentagonal Body. In this the exterior Surfaces of the Joints are thick set with small Studs. From the great Chalk-pit, near *Croydon, Surrey.*

*i. 3.* Seven Joints, larger than any of the precedent, of another sort of Body. *Gravesend, Kent.*

*i. 4.* Several small Joints, of another sort. From the Chalk-pits of *Kent, Essex, and Surrey.*

*i. 5.* Several other Joints, swelling in the middle. From the Chalk-pits of *Croydon, Purfleet, Deptford, Northfleet, and Greenhithe.*

*i. 6.* Several long Joints, of like Bodies. From the Chalk-pits of *Essex, Kent, and Surrey.*

*i. 7.* Several other long Joints, swelling at one end into a Knob, upon which is a pentagonal Figure. Out of the same Chalk-pits.

*i. 8.* A single one, of the same kind, the Knob of which adheres to a small round Flint. *Greenhithe Chalk-pit, Kent.*

*i. 9.*

i. 9. A jointed Body, branched irregularly with a Piece of the Chalk in which it was found. *Northfleet, Kent.*

i. 10. Several of these ramose jointed Bodies. From several Chalk-pits in *Kent*. These broke, shew plainly a Texture like that of the Spikes of the *Echini Ovarij*, and seem to have serv'd as Appendages, or Trains to some kind of Shell allied to that *Echinus*. See what is noted of the *Entrochi*, CLASS vii. and of the *Asteria*, CLASS viii. both which Bodies are also of like interior Texture and Constitution, and break in like manner.

i. 11. Several Bodies of different, but regular Figures. From *Cowley-Common*, near *Oxford*.

i. 12. Part of the Shell of some Body, seeming to be a Piece of some uncommon kind of *Echinus*, lying in a whitish gritty Stone. From a Stone-pit South-East of *Wakerly*. There are Fragments of other Shells, and Ova of Fishes in the same Stone.

i. 13. An Impression of some Body, seeming to be of the same kind with the foregoing, in a grey Flint. *Hampstead-Heath, Middlesex.*

## CLASSIS VII.

### ENTROCHI & TROCHITÆ.

These Bodies are of much the same Texture and Constitution with the Spikes of the *Echini Marini*; and have serv'd as Appendages, or Trains, to a Shell not very unlike that of the *Echinus Ovarius*; but tender and brittle, so that 'tis rarely preserved. Mr. *Beaumont* has grav'd one Species of it, *Philos. Transf.* N<sup>o</sup> --- I have consider'd these Bodies more particularly in one of my *Gresham Lectures*, Confer. N<sup>o</sup> i. 10. *supra*.

k. 1, 2, 3, 4, 5, 6, 6<sup>x</sup>. *Entrochi*; found at *Stainton*, two Miles from *Penrith*, *Cumberland*, in a Bank near a Spring, very plentifully. Dr. *Nicholson*, Lord Bishop of *Carlisle*.

k. 7, 8, 9. On the Shore of the River near *Moreland*, and in *Westmorland*, where such are found pretty plentifully. Bp *Nicholson*.

k. 10. Bp *Nicholson*. Out of the Diocese of *Carlisle*.

k. 11. Bp *Nicholson*. *Ibid.*

k. 12. Bp *Nicholson*. *Ibid.*

k. 13. Many, small, red. Bp *Nicholson*. Also a Pentagonal of one of the Shells, to which this sort belong. From *Howlees*, betwixt *Newbiggin* and *Stainton*, *Cumberland*.

k. 13<sup>x</sup>. Many small Joints. Mr. *Nicholson*. Diocese of *Carlisle*.

k. 14. *V. Lbrudij*, Num. 1136. Bp *Nicholson*. *Ibid.*

k. 14<sup>x</sup>. From *Cumberland*. Mr. *Clarke*.

k. 15, 16, 17. Found in the Shore of a River near *Threapland*, *Westmorland*. Mr. *Clarke*.

k. 18. In the same Place. Compress'd and flattened.

k. 19, 20, 21, 22, 23. Five compress'd, from still the same Place.

k. 24, 25, 26, 27. Hollow in the middle, and fill'd with a grey stoney Matter. From the same Place also.

k. 28,



k. 28, 29, 30, 31, 32, 33. Found in the Bank of a Rivulet at *Ploveridge*, near *Shap*, *Westmorland*. They call them there *Fatry-Stones*. Mr. *Clarke*.

k. 34, 35, 36, 36<sup>x</sup>, 36<sup>\*</sup>, 37, 38, 39. Eight, large, with Vestigia of Branches proceeding forth of them. Mr. *Clarke*.

k. 40, 41. Two, large, swelling in the Middle. Bp *Nicholson*. Diocese of *Carlisle*.

k. 42. Many, smaller; from the Banks of the Brook *Ellerbeck*, near *Torpenhoe*, *Cumberland*. Mr. *Clarke*.

k. 43. Many single Joints. Mr. *Nicholson*, and Mr. *Clarke*.

k. 44. Many *Entrochi*, and single Joints. *Cumberland*. Mr. *Clarke*.

k. 45. An *Entrochus*, with a Coralline Body adhering to it. Bp *Nicholson*. Diocese of *Carlisle*.

k. 46. Two, with Spat adhering. Mr. *Nicholson*. *Ibid*.

k. 47. An *Entrochus*, with many Branches arising out of it. Found near *Ipswich* in *Suffolk*.

k. 48. Found in the Rubble cast out of a Lead-Mine near *Richmond-Moore*, *Yorkshire*.

k. 49. Found, loose, in the bottom of a Quarry by the side of the Road to *Fremington*, 2 Miles from *Mask*, *Yorkshire*.

k. 49<sup>x</sup>. Found in the *Isle of Man*; and sent me by Dr. *Wilson*, Lord Bishop of that Island.

k. 50. Found near *Wooky-Hole*, by *Wells*, *Somersetshire*.

k. 51. Several *Entrochi*, in Joints; also a Piece of the Shell. From *Mendip-Hills*, *Somersetshire*.

k. 52. In the great Lime-pit, near *Dudley-Castle*, *Staffordshire*.

k. 53. From a Lead-Mine, near *Worksworth*, in the *Peak*, *Derbyshire*.

k. 54. Three Joints. *Haddon Pastures*, in the *Peak*, *Derbyshire*.

k. 55, 56. Two *Trochite*. Found in a Heap of Clay in the Pasture of *Haddon*, in the *Peak*, near the Earl of *Rutland's House*.

k. 57. From several Places on *Mendip*, *Somersetshire*.

k. 57<sup>a</sup>. *Entrochi*, of various Figures; found in the Rubble and Stone near *Charter-House*, *Mendip*; where they occur in great Numbers.

k. 58. A Mass of Stone, with several *Entrochi* in it, and Fragments of Shells; from a Pit near the Earl of *Rutland's House*, in *Haddon Pastures*, in the *Peak*.

k. 59. A Mass, very thick set with *Entrochi*. From the Quarry two Miles from *Mask*, *Yorkshire*, mention'd above, k. 49. All the Stone of this Quarry is full of them.

k. 60. Another Mass, as full of them as the former. From a Stone-pit, about 50 Yards in perpendicular, above the River *Swale*, on the side of a Hill about a Mile from *Richmond*, *Yorkshire*. There were great Numbers of these, of Shells, and of Impressions of Shells upon the Stone.

k. 61, 62, 63. Three Masses, with *Entrochi*, and several Coral-loid Bodies. From the great Limestone-Quarry, near *Dudley*, *Staffordshire*.



k. 64. A Mass of grey Stone, thick set with *Entrochi*; from *Worksworth*, in the Peak.

k. 65. Mr. *Southwell*. Found near *King's-Weston*, in *Gloucestershire*.

k. 66. *Ibid*.

k. 67, 68, 69, 70, 71. Five Masses of Stone, extremely thick set with *Entrochi*, and having also in them Fragments and Impressions of Shells. Found on the South-side of *Ingleborough-Hill*, near the Top, *Yorkshire*. Mr. *Groomé*.

k. 72. A Mass of Stone, with *Entrochi*, Fragments of Shells, and some other jointed Bodies. Bp *Nicholson*. Diocese of *Carlisle*.

k. 73. Mr. *Nicholson*. *Ibid*.

k. 74. *Entrochi*, given me by Dr. *Evans*, Lord Bishop of *Bangor*. From the Island of *Anglesey*.

## CLASSIS VIII.

### ASTERIÆ.

These have serv'd, as the *Entrochi*, [*Vid*. Class 7.] as Appendages to Shells. See one of my *Gresham-Lectures*, concerning the Origin and Constitution of these Bodies. Confer. N<sup>o</sup> i. 10. *supra*.

l. 1. Several Columns of *Asteria*, and single Joints; from two plough'd Lands  $\frac{1}{4}$  of a Mile South from *Marston-Trussel*, *Northamptonshire*. One of the Columns has part of the Shell belonging to this Species still adhering to it: and was found by Mr. *Howard*, Rector of *Marston*. This last is since described by Mr. *Morton*, Nat. Hist. of *Northamptonshire*, p. 239. Tab. 10. Fig. 19.

l. 2. Several Columns, and single Stars, of different Sizes; from the same Place.

l. 3. Others, found plentifully in two Banks near *Whitton*, *Lincolnshire*; where the People call them *Castles* and *Aposfiles*.

l. 4. Others, from *Aukborough*, *Lincolnshire*.

l. 5. Others, from *Lassington*, near *Gloucester*.

l. 6. A Column, found on the Shore of the River, near *Moreland*, in *Westmorland*. Mr. *Clarke*.

l. 7. Another; found in a Bank, near a Spring, at *Stainton* near *Penrith*, *Cumberland*. Bp *Nicholson*.

l. 7<sup>x</sup>. A Column, somewhat bent, consisting of 18 Stars. From the Shores near *Hull*, *Yorkshire*.

l. 8. Several small Stars; found in the Quarries near *Sherborn*, *Gloucestershire*.

l. 9. Joints and Columns; from the Cliffs of the River *Severn*, near *Pyrton-Passage*.

l. 10. *Asteria*; from *Shugborough*, *Warwickshire*.

l. 11. Several Columns; from the Shores of the River near *Rugthorp*, *Yorkshire*.

l. 12. A Column, with Fragments of Shells adhering to it; from *Lubenham-Brook*, *Leicestershire*.

l. 13.

- l. 13.* Several Columns, Stars, and Wires; from the same Brook.
- l. 14.* Others, found in sinking a Well at *Marston-Trussel*, *Northamptonshire*.
- l. 15.* A very strange one, seeming to be the Joint next the Shell. Found in sinking the same Well at *Marston*. Given me by *Mr. Howard*, Rector of the Town.
- l. 16, 17.* Two Columns, with Pieces of Shells adhering to them. From a Brook near *Marston-Trussel*.
- l. 18.* Several, with some of those Branches that are wont to arise from them, call'd, by some, *Wires*. From the same Brook.
- l. 19.* A pentagonal Column, [an *Entrocho-Asteria*] jointed, but not fulcated, like the common *Asteria*, betwixt the Angles. Found in a Bank, near a Spring, by *Stainton* in *Cumberland*. Bp *Nicholson*.
- l. 19<sup>x</sup>.* Two Columns of the *Entrocho-Asteria*, with five Sides: and one Column with four Sides. From *How-Lees*, betwixt *Newbiggin* and *Stainton*, *Cumberland*. *Mr. Clarke*.
- l. 20.* Three others. Bp *Nicholson*. *Cumberland*.
- l. 21.* A Mass of Stone, thick set with Columns, Stars, and Joints of Wires. Found on the Shores of *Severn* near *Arlingham*. In some of the Columns, the Manner of the Articulation, or Conjunction of the Stars, is very conspicuous.
- l. 22.* A Mass of Stone, with several Columns in it. Found in the plough'd Lands near *Marston*, *Northamptonshire*, along with *l. 1.* The Manner of the Articulations is likewise observable in this.
- l. 23.* A Mass of Stone, with an *Asteria*, several Joints of Wires, and Fragments of Shells; from the same Place.
- l. 24.* A Mass of a dark grey Stone, with several Columns in it, vast Numbers of Joints of Wires, and some Fragments of Shells. From the Shores of *Severn*, near *Pyrton-Passage*.
- l. 24<sup>x</sup>.* Another like Mass, but larger, very thick set with *Asteria*, both single and in Columns, very fairly display'd; with Fragments of Shells. *Pyrton-Passage*.
- l. 25.* Another like Mass. The Stars in this are white, glossy, and break much like the *Lapis Judaicus*, or tumid Spine of an *Echinus Marinus*. *Pyrton-Passage*.

## CLASSIS IX.

## CRUSTACEA.

*m. 1, 2.* Two small Crabs, not much unlike those which, on the Coasts of *Suffex*, particularly about *Shoreham*, are called *Portugal Crabs*. These were found in the Cliffs at *Folkston*, near *Dover*.

*m. 3.* A Piece of the Claw of a small Crab. From ----- in *Wales*. *Mr. Lhwyd*.

## CLASSIS X.

*Piscium Partes.*

n. 1. Part of the Skin of a Fish, with the Scales on, adhering to a Pyrites; found in the great Clay-pit, *Richmond, Surrey*. This Mr. Doody shew'd to Mr. Ray; and, in his *Physico-Theol. Discourses*, he erroneously calls it, *a Mass of Fishes*. Given me by Mr. Doody.

n. 2, 3, 4, 5, 6. Five Pieces of large Bones, seeming to be of Sea-Fishes. Found upon the Shore near *Harwich-Cliffs*. Mr. *Adam Buddle*.

n. 7. Several less. Found in the Stone-pits about *Witney, Oxfordshire*. Mr. *Fitz-Roberts*.

n. 8. A large Vertebra of a Fish. Found on the plough'd Lands near *Walgrave, Northamptonshire*. Mr. *Morton*.

n. 9. Another. Found in digging to lay the Foundation of a Wall at *Welham in Leicestershire*. Mr. *Morton*.

n. 9<sup>x</sup>. Two Vertebrae of the Back-Bone of some large Sea-Fish, dug up near *Bridport, Somersetshire*.

n. 9<sup>a</sup>. Two Vertebrae of some large kind of Fish. They have Shells affixed to them; even upon the Flats, that were contiguous while the Fish were living; so that the Fish must have been dead, the Back-Bone broke, and the Vertebres parted and expos'd loose in the Sea, or on the Shore, for some time, before the Deluge. For these were fresh beat out of the Cliff: and there are no like Shells now living in the adjacent Creek. Found on the Shores, on the East-side of a Creek, about a Mile above *Weymouth-Bridge*.

n. 9<sup>b</sup>. A Vertebre. Found at *Pyrton-Passage*, over the *Severn*.

n. 9<sup>c</sup>. A Vertebre. Got out of the Cliffs betwixt *Limington* and *Christ-Church*, about 5 Miles from the latter. There were several others, but much rotted and impair'd: The Soil here abounding with Vitriol, which erodes and destroys these Bodies.

n. 10, 10<sup>x</sup>, 11, 12, 13, to 21. Vertebrae of Fishes of several Sizes. Found in the Cliffs on the North-side of *Sheppey-Island, Kent*.

n. 22, 23, 24, 25, 26, 27. Six others, flatter, belonging to some other Species of Fish. Two or three of these seem to have been Bones of Sharks. From the same Cliffs.

n. 28, 29, 30, 31, 32, 32<sup>x</sup>. Six others, of different Sizes. *Richmond Clay-pit, Surrey*.

n. 32 †. Three Vertebres, pretty large, adhering together. One of them is somewhat dislocated. There were five thus cohering when first found, but two of them are since broken off. There are Masses of the Pyrites concreted upon them. Found near 70 Foot deep, in the great Clay-pit at *Richmond, Surrey*.

n. 33. Two others, adhering together. From the same Clay-pit.

n. 34. A small one. From - - - in *Northamptonshire*. Mr. *Morton*.

n. 35, 36. Two, pretty large ones; from the Cliffs of the *Hum-ber*, near *Whitton, Lincolnshire*.

n. 36<sup>x</sup>.

*n. 36<sup>x</sup>*. Another. *Pyrtou-Passage*, over the *Severn*, *Gloucestershire*.

*n. 37*. A small Bone of the Scapula Fin of a Porpus, Dolphin, or some other Fish of the Cetaceous Kind. Found in the Northern Cliffs of *Sheppey-Island*. This has something of a Pyrites adhering to it, as several of the Vertebrae, and Glossopetrae, found here, have.

*n. 38, 39, 40*. Having Pyrites adhering to them, are dissolv'd and perish'd.

*n. 41*. A large *Glossopetra*, or Shark's Tooth. From a Chalk-pit, at *Northfleet*, in *Kent*.

*n. 42, 43, 43<sup>x</sup>, 44*, to *53*. Eighteen Sharks Teeth, of different Figures and Sizes. From the Cliffs on the Shores of *Sheppey-Island*.

*n. 59*. From the same Cliffs. I have seen a young Shark, taken on the Coasts near *Scarborough*, that had in the Jaws several Rows of Teeth, like this, *n. 59*. only somewhat less. That Fish was near 4 Foot in Length.

*n. 60, 61*. From the same Cliffs.

*n. 62*. Ten, from the same Cliffs.

*n. 63*. Eight, from the same Cliffs.

*n. 63<sup>x</sup>*. A large Shark's Tooth, with the Root cover'd with a grey stoney Accretion. On the Outside of which is a Substance, arising from the Roots of the Tooth, and seeming to be part of the Ligaments, by means of which the Tooth was connected to the Jaw. There is a bit of it broken off, and lying by. From the Cliffs by *Whitstable*, *Kent*.

*n. 63<sup>†</sup>, 63<sup>\*</sup>*. Two more, less; from the same Cliffs.

*n. 63<sup>a</sup>, 63<sup>b</sup>, 63<sup>c</sup>*. Three Sharks Teeth, digged out of a Cliff, at the depth of about 60 Foot, betwixt *Milford* and *Hordwell*, *Hampshire*.

*n. 64*. Twenty-three, of different Sizes; from the great Clay-pit at *Richmond*, *Surrey*.

*n. 65*. Ten, of different Shapes and Sizes; from the Chalk-pits at *Greenhithe*, *Northfleet*, *Croydon*, and *Purfleet*.

*n. 66*. Another; from the great Chalk-pit at *Northfleet*.

*n. 67*. Another, broken; from a Tile Clay-pit, near *Highgate*, *Middlesex*.

*n. 67<sup>x</sup>*. Another, fair and entire; found in a Pit of Clay, used for making Tiles, at *Harrow-on-the-Hill*. This Pit was in the Town; and the Workmen told me they met with these Teeth in the Clay pretty frequently: and that in sinking a Well near the Church, Shells of several sorts were found 70 Foot deep.

*n. 68*. In a Clay-pit, at *West-End*, near *Hampstead*.

*n. 68<sup>x</sup>*. From the Clay-pit at *Hunton*, in *Kent*, mentioned by Dr. Hatley, *Philos. Transf.* N<sup>o</sup> 155. p. 463.

*n. 69*. Out of a Clay-pit on the Hill on the East-side of *Highgate*.

n. 69<sup>x</sup>. Eight, small; out of a Bed of blueish Clay 30 Foot deep; in a Tile Clay-pit, near *Islington, Middlesex*. There were found in the same Bed turbinated Sea-Shells, and Fragments of some kind of crustaceous Shell-Fish.

n. 69<sup>†</sup>.

n. 70. In a Tile Clay-pit in *Epping-Forest*, about a Mile and half from *Waltham-Stow*, by the Road, almost at the Top of the Hill, near the Mill. Other like Sharks Teeth I have seen, that were dugged up in another Pit betwixt that and the *Green-Man*.

n. 71. In a Chalk-pit, on the *Downs*, near *Smitham-Bottom*, not far from *Croydon, Surrey*.

n. 72. From *Cherry-Hinton* Chalk-pits, near *Cambridge*.

n. 73. From a Sand-pit, at the bottom of *Shooter's-Hill*.

n. 73<sup>x</sup>. Found in a Tile Clay-pit, at *New-Cross*, near *Deptford*.

n. 74. Four; from the Chalk-pits at *Northfleet, Kent*.

n. 75. From a Gravel-pit, near *Desborough, Northamptonshire*.

n. 76. Several small ones, found at *Farrington, Berkshire*.

n. 77. A conical Body, of a boney Substance, a little crooked, about half an Inch long. From a Stone-pit, near *Grindon, Northamptonshire*. To this Kind Mr. *Lhwyd* gives the fantastic Name of *Plectronites*. (*Lythophyl. Britan. Cl. 9. p. 66. & seq.*) 'Tis the medullary Part of the Tooth of a large Fish. I have part of the Jaw, near 2 Foot long, with several other Pieces; found at the Depth of about 24 Foot, in a Quarry, in the Estate of Sir *Tho. Read*, near *Shipton, Oxfordshire*.

n. 78. Eight other like boney Bodies, of different Sizes. From *Witney* and *Farrington, Oxfordshire*.

n. 79. Several *Bufonites*, or Teeth of the *Lupus Marinus*. Found about *Witney*, and the Parts adjacent, *Oxfordshire*.

n. 79<sup>x</sup>. Fourteen Teeth of the *Lupus Marinus*, with part of the Jaw, or rather the Palate, of that Fish in which they are infix'd. From *Enston, Oxfordshire*. Mr. *Stonestreet*. This is a very great and valuable Curiosity. Mr. *Lhwyd* mentions a Piece of a Jaw, with three Teeth in it; *Philos. Transf. N° 200. p. 755. N° 19. & Lythophylac. p. 70. N° 1368*.

n. 80. Three more; from a Stone-pit, near *Grafton, Northamptonshire*.

n. 81. Four oblong Bodies, seeming to have been Teeth, or Parts of boney Palates of Fishes. From a Gravel-pit, near *Desborough, Northamptonshire*.

n. 82. Nine other from a Stone-pit, near *Grafton, Northamptonshire*.

n. 83. Another from a Stone-pit, near *Farrington, Berkshire*.

n. 84. Six Rhomboidal Bodies of like sort. *Grafton* Stone-pit.

n. 84<sup>x</sup>. Another, *Witney, Oxfordshire*.

n. 85. Four small Rhombs. *Desborough* Gravel-pit.

n. 86, 87, 88, 89, 90. Five oblong Rhomboids. From a Stone-pit, near *Grafton, Northamptonshire*. To this kind Mr. *Lhwyd* has given the affected Name of *Siliquastrum*. 'Tis a boney Substance].



france: and seems to have serv'd to cover the Tongue, or the Palate of some kind of Fish. *M. du Hamel* makes mention of such a sort of Coverture. "Vulpis marinæ Lingua præduris Oculis, argenteis, non acutis, sed quadratis munitur. Vidimus Maxillas Piscis quas Clariss. Abbas Gendron à Canadensi Provincia attulerat, quæ strata erant dentibus complanatis, & duris; hæ Molarum instar, Cochlearum testas quibus vescitur is Piscis, terunt." *Vid. du Hamel Physicæ Part. 3. Tract. 3. Dissert. 1. c. 1. p. 331. d. in 8º.*

n. 91. Another, *Witney, Oxfordshire.*

n. 92, 93. Two more. *Farrington, Berkshire.*

n. 94. Found in the Gravel in *Sir Ralph Dutton's Court-yard, Sherborn, Gloucestershire.*

n. 95. Another, from *Farrington, Berkshire.*

n. 96. Another, near *Stunsfield, Oxfordshire.*

n. 97. An oblong Body, black, full of very small Puncta, *Witney.*

n. 98. Three small Bodies from a Gravel-pit, near *Desborough, Northamptonshire.*

n. 99. Two small boney Bodies of an irregular Figure, having their Surface thick set with Puncta or little Holes. *Farrington, Berkshire.*

n. 100. Part of a large hard, boney Substance, seeming to have been the Palate of some Fish, having its outer Surface ridged and furrow'd alternately. The Ridges are sharp, except in the middle, and upper part, where it has been most expos'd to be fretted and worn in breaking the Shells of the Fish the Creature lived on; in which part 'tis manifestly worn down, and the Ridges smoothed. 'Tis very hard and polite: and could not have been reduc'd thus but by long time and great force. Partly by that, and partly by the bigness of it, 'tis plain this was of some grown old Fish: and had been long us'd to grinding and breaking of Shells. Found near 40 Foot deep in the great Chalk-pit at *Greenhithe.*

n. 101. Another less and not of so old and grown a Fish as the former has been. Nor are the Ridges so much worn; which indeed is but a Consequence of its not having been so long us'd. From a Chalk-pit, near *Rygate, Surrey.*

n. 102. Another still less, and probably of a younger Fish; the Ridges being little or nothing ground. Out of a Chalk-pit near *Smitham Bottom, betwixt Croydon and Woodcot, Surrey.*

n. 103. Another, very little; the Ridges entire, and with their Edges very sharp. From the same Chalk-pit near *Rygate*, with 101.

n. 103\*. Part of a flat Tooth: or rather Grinder of a Palate. The Ridges and Eminencies of this are worn down by grinding, tho' it be small; so that it seems to be of an old grown Fish, that had us'd and worn it long. Consequently 'tis probable the Kind have several of these Grinders, less, and larger, distinct, in the same Jaw. From a Chalk-pit, on *Boxley-Hill.*

n. 103†. A Tooth, found in the same Chalk-pit with n. 102. *ibid.*, near *Smitham Bottom.*

n. 103  $\frac{1}{2}$ . A boney Body, flat on one side, and convex on the other, the latter thick set with small Cavities in a very beautiful Manner. Out of a Chalk-pit near *Epsom, Surrey*.

n. 104. A Mass of Stone made up almost entirely of the little round Pellicules of the Ova of Fishes, fill'd with a fine stoney Matter. There are in it some Particles of Spar, and Pieces of the Shells of Bivalves: c. rather Spar that has succeeded in the room of those Shells, when perished and gone. Broke off a Stratum of Stone in the Quarry near *Nunnington, Yorkshire*. Stone thus set with Ova has pass'd amongst the Writers of *Nat. Hist.* by the Name of the *Hammites*.—— "Gruppo d'Ova di sepia petrificate, Museo Cospiano - - - - vid. *Ketton-stone*, in Dr. *Hook's Microgr.* p. 93. *Hammites Ovis piscium similis est. Plin. L. 37.* "c. 10. *Hammites in Helvetia effossus. J. Scheuchzeri Specim. Lithogr. Helvet.* p. 40.

n. 105. Another Piece of Stone with small Ova in it. From *Desborough*.

n. 106. Another, out of a Quarry near *Shipton, Oxfordshire*.

n. 107. Another, from a large Quarry, near *Northleach, Gloucestershire*. In this Quarry there are vast Strata, near the Surface, all full of these Ova.

n. 108. Another of a faint Purple Colour. From the great Quarry at *Ketton, Northamptonshire*.

n. 109. Another, yellow. From the same Quarry.

n. 110. Another, yellow. Found near *Burleigh House*; on the Edge of *Lincolnshire*.

## CLASSIS XI.

### *Quadrupedum Partes.*

o. 1. Part of a large Horn of the Moose-Deer. Bp *Nicholson*. See the Lecture about the Fossil Moose-Deer's Horns of *England and Ireland*.

o. 2. Part of a large Tusk of an Elephant. This with its fellow of the same Size were dug up at *Bowden Parva, Northamptonshire*. They lay in an horizontal Posture in a Stratum of common Clay, above which was a Stratum of Gravel: and over that a Stratum of blue Clay. They were pretty entire when found, and each 16 Inches in Circumference in the thickest part. But being decay'd, this was shatter'd and broken in the Carriage. Mr. *Morton*. He search'd the Clay that was dug and flung out there, but could find no other Teeth or Bones, but good store of Sea-Shells. The Stratum of Clay in which they lay was not above 3 Foot below the Surface. They were neither of 'em entire, the 2 Ends of each being broken off before he saw them. And consequently the thickest part was lost and gone, as well as the smallest. And yet 'tis very rare to meet with an Elephant's Tooth in any part 16 Inches about. So that these must have belong'd to a very large Creature. See the Lecture about *Ebur Fossile*.

o. 3. A lesser Piece of the same Tooth.

o. 4. Several Pieces of an Elephant's Teeth dug up in a Gravel-pit at *Islington*, about a Furlong N. W. of the Well call'd *London-Spaw*. It lay about 8 Foot deep. There were several Bones with it.

o. 5. Part of the Thigh-Bone of an Ox, dig'd up in a Gravel-pit, in *Windsor-Park*.

o. 6, 7, 8, 9, 10. Dug up in another Gravel-pit at the same Park. These lay about 14 Foot deep.

o. 11, 12. Found seven Foot deep in a Gravel-pit, near the Mill in *Windsor Field*.

o. 13. A Shank-Bone digg'd up, along with Nuts, and Branches of Shrubs, 6 or 8 Foot deep, in sinking the Wet Dock, near *Deptford*.

o. 14. A Piece of a Bone found eighteen Foot deep in a Gravel-pit, near *Chelsea-College*.

o. 15. A small Bone and 2 small boney Polyhedrous Bodies, out of a Stratum of Stone, about 10 Foot deep, in a Quarry, near *Broadwell-Grove, Oxfordshire*.

o. 16. A Fragment of the interior or porous Part of a Bone, tinged of a fine bright green Colour. Found in a Copper-Mine in *Cumberland*. Those boney Bodies that are found amongst Copper-Ores in the Earth, are frequently tinged with green (r blue, the Colours that that Metal naturally gives. The Turcois Stone, as it is commonly stiled by Lapidaries, is no other than part of a Bone so tinged. See the Account of that Body in the Catalogue of the foreign Fossils, p. - - - - as also of a Bone dug up in the Copper-Mines of *Hungary*, tinged green, *ibid.* p. and of another found lodg'd at a considerable depth under a Stratum of solid Stone, at - - - - in *Yorkshire*, in a Letter of Mr. *Thoresby*, dated Nov. 9. 1702.

o. 17. A Piece of a Bone, found, among several others, in a Stratum of solid Stone in a Quarry near *Caple-Tar, Cornwall*. It has several Spots of green upon it, which are no other than Efflorescencies of Copper-Ore. There were some small Veins of Marcasite, with a few Strings of green Copper-Ore, in the same Quarry : and *Caple-Tar Gold Mine*, as 'tis call'd, is not far off. See a Sample of the Marcasite got in that Mine, in the former part of this Catalogue, p. - - - - The Stratum in which these Bones were lodged was above 100 Foot deep.

## CLASSIS XII.

*Corpora Marina, praesertim Conchyliis Massa lapidea confertim immista.*

p. 1, 2, to 10. inclusive. Ten Masses of a reddish hardned earthy Matter, containing in it Entrochi, Sea-Shells, and Impressions of them, Corallina, the Sea-Fan, and other like Bodies. From *Stanton, Cumberland*. Sent by Bishop *Nicholson*. Dr. *Plukenet*, Mr. *Stonesfleet*,

*Stonefleet*, Mr. *Doody*, and Mr. *Buddle*, assert that these Bodies are real. *p. 5.* has in it a Pinna of a Plant of the Fern-kind.

*p. 11.* Small Fragments of Shells; and a white reticular Body, appearing to be part of a Sea-Fan, in a blackish hardened earthy Mass. Found by the sides of a Brook about 50 Yards from a Farm-House, called *Threpland* in *Westmorland*. There's more of it in the same Banks. Dr. *Plukenet*, and the other three Gentlemen above named assent also to this, and to what follows at *p. 12.*

*p. 12.* Another like Mass from the same place, with part of a Sea-Fan also in it: and the Impression of an *Entrochus*.

*p. 13.* A grey stoney Mass, very hard, full of Shells, worn by the Agitation of the Sea. Found on the Shores near *Scarborough*, *Yorkshire*. This, and the following to *p. 22\**, are not properly *Pebbles*, or of the original *Nodules*, that were form'd in the Water at the Deluge, [vid. *Nat. Hist. Earth.* Part iv. *Conf. 2.*] but are only Lumps of hard Stone, broken off from the Strata: their Surfaces smoothen'd and the Bodies ground into this Form by the Sea's agitating and rolling them to and again upon the Shores.

*p. 14.* Another from the same Shores.

*p. 15.* Another, Found on the Shores near *Owthorn*, *Yorkshire*.

*p. 16.* Another, from *Owthorn* Shores.

*p. 17.* Another, brown. From *Owthorn* Shores.

*p. 18.* Another, reddish, from *Owthorn* Shores. The Shells in this appear with a talky Gloss: and are probably constituted by Talc, the testaceous Matter being dissolv'd, convey'd away: and succeeded by this talky Spar, brought by Water passing the Stone.

*p. 19.* Another from the same Shores. The Shells here are consumed and gone, and the Places of them fill'd with a white talky Spar.

*p. 20.* Another of a brown Colour near black. *Owthorn* Shores.

*p. 21.* Another. Found on the Shores betwixt *Skegness* and *Ingoldmells*, *Lincolnshire*.

*p. 22.* A small Mass of a grey Stone, with two Shells of some Bivalve, very white, so worn as to appear like two C. C. From the Northern Shores of *Sheppey Island*, *Kent*.

*p. 22\**. Another, very large, with several sorts of the Bodies exhibited in the 6th CLASS above, *i. 1, 2, 3, & seq.* in it. *Owthorn* Shores.

*p. 22†.* Another, less, with like Bodies in it. *Owthorn* Shores.

*p. 22\**. Another, with Bodies of still the same kinds in it. Found on the *Yorkshire* Shores of the River *Humber*, near *Paul*.

*p. 23.* Part of a dark grey Stone. There were small Bivalves in it; the Shells whereof, being perish'd and gone, are succeeded by a shining brassy Pyrites. Out of a very thick Stratum of Stone, in a Quarry near *Bakewell*, in the *Peak*, *Derbyshire*.

*p. 24.* A Mass of brown Stone, set extremely thick with Shells. Found in a Brook near *Northleach*, *Gloucestershire*.

*p. 25.* Another, *Clipston-Quarry*, *Northamptonshire*.

*p. 26.* Another. *Grimworth*, *Northamptonshire*.



p. 27. Another. From the Stone-pits at *Tick-Marsh, Northamptonshire*. This lay only a Foot deep: and 'twas taken up by Sir *John Pickering*, who observed them lying as thick thence to 6 Foot deep, which was the bottom of the Pit.

p. 28. A single Shell taken out of the precedent Mafs.

p. 29. A Mafs of Stone very thick fet with Shells, out of a Quarry, near *Fairford, Gloucestershire*.

p. 30. Another. Found in *Hoods-well-Town, near Richmond, Yorkshire*.

p. 31. Another, near *Southampton*. There are amongst Fragments of other Shells, two Valves of the *Chama*, lying in this open'd and display'd.

p. 32. & 33. *Crick Stone-pits, Northamptonshire*.

p. 34. *Ibid.* p. 35. *Ibid.*

p. 36. *Whitton Shores, Lincolnshire*.

p. 37. A Mafs with *Concha Anomia*, lying very thick in it. *Sherborn, North-Field, Gloucestershire*.

p. 38. Another Mafs thick fet with various Shells, out of a Lead-Mine, near *Workwork, in the Peak, Derbyshire*.

p. 39. Another, thick with striated *Concha Anomia*, some of them filled with white Spar. *King's-Weston, Gloucestershire*.

p. 40. Another. Some of the Shells having in them likewise white Spar. *Gritworth, Northamptonshire*.

p. 41. Another Mafs, holding *Concha Anomia*, in great Numbers, both of the *laeves* and *striata*, a kind of Oyster-Shell, and other Bivalves. *Barrington great Quarry, Gloucestershire*.

p. 42. Another, out of the same Quarry.

p. 43. Another, wherein are various kinds of Bivalves: and a long, fair Spike of an *Echinus Ovarius*. Found, above 30 Foot deep, in a Quarry near *Farmington, Gloucestershire*.

p. 44, 45. A Mafs of Stone, broken in two, and shewing in it several Shells of some sort of Bivalve. *King's-Weston, Gloucestershire*. Sir *Robert Southwell*.

p. 46, 47. Another, likewise split in two. In this have been many Shells; but they are much decay'd, and but just discernible. *Hinderskelf, Yorkshire*. Mr. *Groome*.

p. 48. A Mafs of black Stone, having in it partly Shells, very thick: and partly Spar, succeeded into the room of Shells decay'd: and succeeded by a sparry Talc. Found among the Rubble of a Coal-pit at *Adderton, Yorkshire*. The *Colliers* say that it lay four Fathom deep, just over the Coal.

[A] p. 49. A Mafs consisting almost entirely of common Oyster-Shells, the Intervals only being fill'd with Sand. From a Rock two Miles distant from the Sea and 200 Foot above it. *Weymouth*.

p. 50. *Ibid.* In this are several very different Shells, both Bivalve and Turbinate.

p. 51. *Ibid.*

p. 52. *Whitton-Cliff, Lincolnshire*.

p. 53, & 54. By *Nicholson*. From the Diocese of *Carlisle*. In these



these two Masses the Shells are very much decay'd; there remaining little more than Impressions of them. By such as these Dr. Lister was misled into the Notion that Fossil Shells were not real, but *mera Umbra, Imagines*, and I know not what. Vid. *Listeri Hist. Animal. Anglia, Tract. 4. p. 243.* See an Icon of this kind, *Tab. 9. Fig. 49. Conf. p. 130. infra.*

p. 55. A Mass extremely thick set with quadrate Tubular Vermiculi marini and other small Shells. *Oxenden, Northamptonshire. Mr. Morton.*

p. 56. Found in the Home-Park of Sir Ralph Dutton. *Sherborn, Gloucestershire.*

[A] p. 57. A Mass with *Cochlitæ* in it. *Petworth, Suffex.* These seem to have been moulded in the *Cochlea fasciata vivipara fluviatilis, Listeri Hist. Conchyl. fluvi. N° 26.* There are of this sort in the Cliffs of *Hampshire.* See the Catalogue of the Shells found there. N° 25.

p. 58. A single *Cochlites* struck out of the aforesaid Mass.

p. 59, 60, 61, 62. Masses of Stone, out of *Portland* great Quarry. The Stratum off which these were broken, lay 50 Foot deep, about 200 Foot above the Sea. They are thick set with Stones, of the same Constitution with that of the common Stratum, cast chiefly in long slender turbinated Shells, and in that Bivalve that Dr. Plot, Nat. Hist. of *Oxfordshire*, calls *Hippocephaloides.* The Shells are all perished, but the Space they possess'd, is left empty, except where accidentally fill'd since.

[A] p. 63. A Mass, wherein are several of the common Pecten, or Escalop-Shells. From ----- *Northamptonshire.*

p. 64. A Mass of a brown Colour, with Shells, and several *Belemnitæ* in it. Some of the *Belemnitæ* are broken to as to discover the Striature and Texture of their Crusts. *Gritworth, Northamptonshire.*

p. 65. Another, with Shells and *Belemnitæ.* *Ibid.*

p. 66. Another, *Ibid.*

p. 67. Another, with Shells, and a piece of Wood, being part of the Branch of some Tree. *Ibid.*

p. 68. A Mass, extremely thick set with various kinds of Shells, and Fragments of Shells. Out of a Gravel-pit near *Oxenden-Church, Northamptonshire. Mr. Morton.*

p. 69. A Mass with *Asteria*, those call'd the Wires, of this Body, and various Kinds of Shells. *Oxenden Gravel-pit. Mr. Morton.*

p. 70. A Mass with several fair Shells in it, of different Kinds. I have a Drawing of it, by Mr. *Faithorn*: But since that was made, the Mass was accidentally broke in two, by a Fall, and one or two of the Shells shatter'd and defac'd. Out of a Stone-pit on *Cowley Common near Oxford.*

p. 71. A Mass of Stone having great Variety and Plenty of Shells, chiefly Bivalves with some turbinated, and Ova of Fishes in it. Found upon the plough'd Lands, on the Brow of a Hill in the Fields, on the West-side of *Sherborn, Gloucestershire.*

p. 72. Another, as thick set with Shells, Bivalves, turbinated, Echini, and Ova. *Windrush, Gloucestershire.*

p. 73. Another. *Stawel, Gloucestershire.*

p. 74. Another, this was part of a Stone struck out of a Wall near Sir Ralph Dutton's House, *Sherborn, Gloucestershire.*

p. 75. Another, with Ova of Fishes, and several very fair and beautiful Shells, both Bivalve, and Turbinate. From a Quarry near *Windrush, Gloucestershire.* I have a Drawing of this, by Mr. *Faithorn.*

p. 76. Another Mass, thick set with Shells of the Bivalve kind. *Hampnet, Gloucestershire.*

p. 77. Another, exhibiting two fair Valves. *Northleach, Gloucestershire.*

p. 78. A Mass thick set with Variety of very fair Shells. Found in *Woodstock-Park, Oxfordshire.*

[A] p. 79. A Pyrites, very thick set with small or young Shells of that sort of Bivalve that Dr. *Lister, Hist. Animal. Anglia. p. 173,* calls *Choncha à maximis, admodum crassa, rotunda, ex nigro rufescens.* And large grown Shells of this Kind are found plentifully in the same Pits. *Conf. N<sup>o</sup> f. 433. & seq.* Those contain'd in this Pyrites, are all of much the same Bigness; and something exceed a large Pea: To which Size Mr. *Hastings* assures me, the young of this Species of Shell-fish naturally arrives at the End of May. So that these were kill'd, and a Stop put to their Growth at that time of the Year; which is the time assign'd by *Moses* for the breaking forth of the Deluge. This Mass was found in the great Clay-pit by *Richmond-Wells, Surrey.* Mr. *Doody.* All that I have ever seen of this Species that are, under a Year's Growth, are of the Size of these. I have met with great Numbers of such in these Pits.

p. 80. A gritty Mass, having in it a fair Pectunculus, and part of another. This, and the following, to p. 86 inclusive, were given me by Mr. *Jackson. vid. c. 29. supra.*

p. 87. Found in sinking a Well at *Bromly in Kent.* Mr. *Emmet.*

p. 88. A Mass of grey Stone, part of a Stratum near the Road, at the West-end of *Stifford,* a little of this side the Rivulet, *Essex.* The following Masses to p. 102 inclusive, were all parts of the same Stratum, and contain in them a great Variety of Shells, both Bivalves and Turbinate, generally well preserv'd, this Stone being ordinarily very firm and hard: and in breaking this Stone, I once observ'd a Shark's Tooth very fair and entire.

p. 89. *Ibid.* p. 90. *Ibid.* p. 91. *Ibid.* p. 92. *Ibid.*

p. 93. *Ibid.* In this, one or two of the Shells have Delineations of Shrubs, made on them by the ascent of fuliginous Steams.

p. 94. Other like Delineations very fair. *ibid.*

p. 95. *Ibid.* p. 96. *Ibid.* p. 97. *Ibid.*

p. 98. *Ibid.* There are fuliginous Delineations on the Shells of this likewise.

p. 99. *Ibid.* This has in it several large flat Shells which lie parallel one to another, and to the Grain, and Horizontal Situation of the Stone. The same is observable in several of the preceding, and in the 3 following Masses.

p. 100. *Ibid.*

p. 101, 102. These, tho' very large, cohered to each other, 'till broken asunder, and parted. *Ibid.* I have observ'd of the same sorts of Shells with those in this *Stifford* Stone, in the great Sand-pit near *Woolwich*; and in another Sand-pit at the Foot of *Shooter's-Hill*, as also in several parts of *Black-Heath*. And Mr. *Derham* sent me several pieces of Stone, not unlike this; in which also were of the very same sorts of Shells, found five or six Foot deep, in digging a Ditch at *Orset*, which is about 3 Miles East of *Stifford*. So that 'tis very likely they were in so great Numbers diffused over all that Tract of Land from *Woolwich* and *Black-Heath* to *Orset*, for almost 20 Miles in length.

p. 102<sup>x</sup>. A piece of the harden'd Marl, as it is called by Dr. *Hatley*. He has given an Account of it, *Philos. Transf.* N<sup>o</sup> 155. p. 463. as composing a *Floor* or *Layer*, about an Inch in thickness; having in it Shells and Impressions of both the bivalve and turbate Kind. *Hunton, Kent.*



De ingenti Rerum Marinarum, in eodem Loco, Telluris Visceribus commissarum, Numero, & Diversitate,

MANTISSA PRIMA.

Sive Conchyliorum quorundam in Agro Hantonenſi erutorum,

CATALOGUS.

P R Æ F A T I O.

**E**Xhibet brevis iſte Catalogus amplam Conchyliorum; *rum Meſſem ex Agro Hantonenſi reportatam. Telluris Viſce-* Tanta eorum Varietas, tot Species, imo & Ge-*ribus eruto-* nera tam longe diverſa, omnia, ſi non in eodem Lo-*rum, Nume-* co, in eadem certe Vicinia congeſta, aliquam primo-*rus, & Varie-* ſaltem intuitu Admirationem incutiant: eoq; majo-*tas.*

rem quod Numero adeo ingenti Species ſingula tan-*taq; Copia eruuntur. In nonnullis etenim Stratis ita abundant ut* an Materiam Terreſtrem, cui committuntur, mole non ſuperent,*merito dubitandum videatur. Quæ tamen Admiratio ceſſabit prorsus* & evaneſcet quum Conchyliæ, non ſolum in hac noſtrâ Inſulâ, ſed in omni alia Telluris Regione, eſſe reperta, idq; non minori Copia, etiam in Locis Mediterraneis & à Mari longiſſime diſſitis, notum ſit.

Quoſq; in Telluris Viſcera pertigerunt hæc cæ-*teraq; Maris Spolia, nondum eſt compertum. Ea* verum reperiri ad maximam uſq; Profunditatem, quò uſpiam ſodiendo pervenitur, certum eſt. Neq; in Terra, in Marga, aut arena Stratis frequentiora ſunt quam in ſaxi, etiam duriffimi. Hujus Rei Documenta Plura, & Exempla, alio Loco \* propoſui. Et quum Stratis ſaxeis, aliisq; etiam duriffimis, eodem plane modo commiſta ſunt, atq; arenaceis & reliquis laxioribus, Saxea illa, cæteraq; itidem olim laxa fuiſſe atque ſoluta liquido conſtat. Reperiuntur quoq; Conchyliæ in Montibus, & ad Summa, etiam altiffimorum, Faſtigia atq; Vertices; idq; per totum Telluris Orbem; certo Indicio Conchyliæ hæc omnia fuiſſe allata, ſtrataq; compilata, à Diluvio univerſali.

Inveniuntur in Fodinis profundiffimis, æq; ac in Summis Montibus.

Strata, quibus committuntur, tum Terreſtria, tum Saxea, congeſta à Diluvio.

\* Vid. g. 4, 12, 13, 14, 15, in the Catalogue of the additional extraneous Engliſh Fossils.



De Hantonen-  
sibus Relatio  
particularis.

Horum nostrorum Hantonensium Pars maxima è  
Clivi: Milfordianis & Hordwellianis eruebantur.  
Reperiuntur quoq; exinde perplura Stadia versus  
Christ-Church; quam longe ulterius, aut per Lit-  
tora, aut per Media Regionis Viscera, diligentiore factò scrutinio pa-  
teat. Hoc certum est Conchyliis in aliis Regionibus, pari numero,  
& varietate, detecta esse per multa ubiq; Passuum Millia. Clivà  
isti Hantonenses in locis nonnullis editissimi sunt: eorumq; stratis  
commissa videntur Conchyliis per plures deorsum Orgyas ad usq; Ma-  
ris superficiem; profundius inquirendi nulla sese obtulit occasio. Stra-  
ta hæc, tum saxea, tum quoq; arenacea, ceteraq; omnia, sibi in-  
vicem parallela jacent, & ab horizontali situ parùm declinantia.  
Ex stratis, Maris Æstum & Procellarum Vi, pulsa, quo modo de  
succino alibi\* notavi, Conchyliis passim in Littore dispersa comparent.

Conchyliis  
quomodo  
tam diu con-  
servata.

Nec, cuiuspiam mirum videatur tot Marinorum  
Animantium Exuvias, per tam multa secula, ad  
nostra usq; Tempora, integras & illasas fuisse con-  
servatas, si stratorum quibus indantur natura &  
indoles penitus aliquantum consideretur. Arena  
enim, & Marga, cum tenuissima sunt, ita se ad

Conchyliis accommodant & applicantur, ut hæc muniant, contra  
externas injurias omnes protegant, tutaq; reddant. Saxum autem  
hec firmissimum est: omnemque, ut aliarum Rerum nocentium &  
corrumpentium, ita Aeris & Pluviarum accessum omnino prohibet.

Inter Hanto-  
nensium reli-  
qua Conchy-  
lia plura ab  
Occidente &  
America.

Ex his Hantonensium Conchyliis varia Anglicana  
sunt, tum marina, tum quoq; fluviatilia. Nonnulla  
vero sunt ignota Originis; quippe quæ Pelagia sunt, &  
intima profundissimorum Marium loca incolunt, nun-  
quam Littora aut Telluris Viciniam appropinquan-  
tia; de quibus fusiùs egi in mea Responsione ad Cl.  
Camerarium, p. 10. & seq. Multa deniq; sunt A-  
mericana; nec ullibi marium hodie viva reperiun-  
tur nisi in iis quæ Americanorum Oras alluunt.  
Nulla autem inter hæc extant ab Oriente prolata:  
Hoc magis notatu dignum censeo, quod inde Ex-  
undationem, quæ hanc nostram insulam submersit &  
operuit, venisse ab Occidente manifestum sit. Haud

Cataclysmus,  
Britanniam  
inundans, ab  
Occidente.

equidem me latet, inter has tam varias Conchyliorum Species, u-  
nam superesse, N<sup>o</sup> 53. Notatam, quæ ab illa quam Doctissimus  
Rumphius in Historia Naturali Amboynæ† exhibuit, parum ablu-  
dit. Sed hæc nostra, quantumvis similis, non ejusdem omnino Spe-  
ciei est cum Amboynensi illa. Nec equidem si ejusdem fuisset Spe-  
ciei quidquam certè inde revera circa hujus nostre Originem erat  
concludendum, quum aliquæ sunt Testæ & America & simul India  
orientali communes: atq; in utraq; illa quantumvis distant Regione,  
hodie viventes observantur.

\* Nat. Hist. of the Earth. Part IV. sub finem.

† Pag. 96. Tab. XXIX. F.



*Purpura Piscis Linguam habet, in Aculeum Offensum durum acutum desinentem. Hoc autem Aculeo, tanquam Terebra quadam, Conchyliorum Testas perforare solet, & Piscibus inclusis per Foramina ita facta extractis, vesci* \*. *Inter has Testas Hantonenses quasdam ita perforatas observavi; cujus Rei Exemplum habemus in Sphondylo, N° 7. Et, quod obiter notandum duxi, ejusdem Speciei Sphondylum habeo, cum plurimis aliis Conchyliis, mediâ Virginiiâ, America Regione, Effossum. Frequens est Purpura in Americanorum Mari: & ab hoc Pisce perforata Testa passim comparent in eorum Littoribus. Sed neq; ipse Pisce in Mari Britannico, nec ab eo perforata Testa in Littore, unquam visuntur; quo liquet tales origine Americanas esse posse, nequaquam Britannicas, ad quantamcunq; in Tellure Britannica Profunditatem jam sepulta lateant & recondantur.*

Hantonensium Conchyliarum quædam perforata à Purpura Maris Americanorum Incolâ.

Unum adhuc monendum restat, ut si quid in sequenti horum Conchyliorum Descriptione, & Characteribus concinnandis peccatum censeant elegantiorum Literarum studiosi, à me, Vestigia Listeriana† pressè nimis insistendo, hoc non mihi vitio vertendum; quum hujus Viri, tam docti, & Naturalis Historiæ Conchyliorum Indagatoris tam diligentis, scripta ab Eruditis omnibus probentur, ejusq; de his Rebus Authoritas adeo rata sit & sancita ut quasi Veri & Recti Norma ab omnibus jam denuo recipitur.

De Conchyliorum Descriptione & Characteribus Apologia.

P.S. Per mediæ Regionis Viscera, &c.] Per totam hanc Regionem, circa Limington, imo in omnibus ferè Locis Novi Saltus, [the New-Forest] passim visuntur Fodinae à quibus Marga eruitur. In his ferè omnibus, simul cum Marga, Conchyliæ Marinae Copiose Effodiuntur.

Una cum Conchyliis in Agro Hantonensi, reperiuntur etiam Vertebrae, & Dentes Piscium Marinorum; de quibus, Vid. n. 9<sup>c</sup>. supra, & N° 64. infra.

\* Vid. quæ de hac re scripsi in Respons. ad Camerar. p. 88, 99. and in the Catalogue of the foreign extraneous Fossils, pag. 88. N° 8. 121.

† Mart. Listeri Hist. Conchyl. Fol. Lond.

*Conchyliorum quorundam Marinorum, è Terræ  
Visceribus, in Agro Hantonensi, erutorum,*

**C A T A L O G U S.**

**C A P. I. Bivalvia.**

1. Pecten, parvus, Auriculis ex altera parte majoribus.
2. Ostrei sulcati, Arborei vulgo dicti, Species.
3. Ostreum arboreum alterum, crebrius sulcatum.
4. Ostreum parvum, læve, minime sulcatum.
5. Ostrei cujusdam oblongi testa inferior seu plana, superficie exteriore ad tactum asperâ.
6. Ostreum ut videtur, Sylvestre Rondeletij.
7. Ostreoides crassâ, rugosâ, vertice in utraq; Testa recurvo. Hujus Speciei Conchylia Ostreoides effodiuntur etiam in Virginia. Vid. *Catalogue of the additional foreign extraneous Fossils.*
8. Pectunculus, è Polypleptoginglimis Listeri, ambitu rotundo, creberrime striatus.
9. Alter ejusdem generis minor, striis rarioribus.
10. Alter minor, striis crebrioribus.
11. Pectunculus Polypleptoginglimos, formâ oblongâ, Musculus Matthiolo dictus, tenuiter striatus.
12. Pectunculus lævis, parvus admodum, ambitu rotundo.
13. Pectunculus lævis alius, parvus, ex alterâ Parte paulò productior.
14. Pectunculus tenuiter fasciatus, vertice multum recurvo.
15. Pectunculus minimus fasciatus.
16. Pectunculus, exiguus, profundius sulcatus, asper.
17. Lapis Telliniformis, cujus superficiei Reliquiæ quædam Testæ nitidæ adhærent.
18. Tellina, parva, lævis.
19. Tellina altera, minuta, tenuiter fasciata.
20. Tellina fasciatim profunde sulcata, altera parte in Angulum excurrente.

**C A P. II. Conchylia, Testâ simplici, non tortilia.**

21. Dentale gracile, & læve, nostrate longius. Horum Aliqua Mucronem versus, aliquantulum striata sunt.
22. Patella Ambitu rotundo, septo quodam intus finum exiguum includente.
23. Patella quædam, ut videtur, admodum compressa.

**C A P. III. Tortilia, seu Turbinata.**

24. Cochlea umbilicata, Claviculâ brevi.
25. Cochlea, minor, non umbilicata, Claviculâ productiore. Videtur hæc esse *Cochlea fasciata vivipara fluviatilis, Listeri*, Hist. Conchyl. fluviat. N° 26.

26. Fragmenta Cochleæ cujusdam, Formâ compressâ.
27. Cochlea striata, Claviculâ longissimâ, Orbibus tumidioribus, seu pulvinatis.
28. Cochlea striata, Claviculâ longissimâ, Orbibus planis seu minus eminentibus.
29. Cochlea minima, lævis, Claviculâ longissimâ.
30. Cochlea lævis, Claviculâ longâ, Ore pyriformi, Testâ tenuissimâ. Tenuitas, cæteraq; hujus Testæ Indoles, arguit eam esse ex fluviatilium vel lacustrium Classe oriundam.
31. Cochlea parva, striata, Claviculâ modicè productâ, ore pyriformi, Columellâ dentatâ.
32. Trochus Pyramidalis, Basi planâ, Tuberculis minimis obsitus.
33. Concha Veneris, ore angusto, utrinq; dentato.
34. Rhombus, Cylindraceus, tenuis.
35. Rhombus Cylindro-Pyramidalis, parvus, asper, Claviculâ modicè productâ.
36. Buccinum, Musicum dictum, Columellâ dentatâ, ad Claviculam muricatum.
37. Buccinum, Musicum minus, non muricatum, labro dentato.
38. Buccinum Claviculâ longissimâ, Tuberculis obsitâ, ore subrotundo.
39. Buccinum, minimum, asperum, Claviculâ longissimâ, ore angusto.
40. Buccinum Claviculâ longâ, striatum, ore oblongo angusto.
41. Buccinum cancellatim tuberculatum, Claviculâ & Rostro modicè productis.
42. Buccinum læve, Claviculâ longissimâ, Orbibus planis.
43. Buccinum læve, Claviculâ modicè productâ, orbibus tumidioribus.
44. Buccinum parvum, secundum Orbes striatum, Rostro brevi, ore subrotundo.
45. Buccinum, parvum, tenuiter striatum, ore angusto.
46. Buccinum, parvum, secundum Orbes striatum, transversim sulcatum, Rostro brevi.
- 46<sup>x</sup>. Buccinum, parvum, Rostro & Claviculâ brevibus, primo Orbe transversim leviter sulcatum, & ad Claviculam depressum.
47. Buccinum læve, Claviculâ & Rostro brevibus, primo Orbe ad Claviculam depresso.
48. Buccinum Tuberculis obsitum, Rostro brevi, labro duplicato.
49. Buccinum læve, Claviculâ & Rostro longis, ad Claviculam muricatum.
50. Buccinum, striatum, Claviculâ longâ, inconcinna, seu Orbibus inæqualibus.
51. Buccinum Claviculâ & Rostro longis, secundum Orbes striatum, transversim sulcatum.
52. Buccinum, crassum, læve, Claviculâ & Rostro longis, Orbibus singulis ad Claviculam in Angulos acutos depressis.
53. Buccinum Claviculâ & Rostro longissimis, striatum, Tuberculis in medio quoq; Orbe asperum.

54. Buccinum Claviculâ & Rostro longissimis, minus, cancellatim striatum.
55. Buccinum Claviculâ & Rostro longis, parvum, secundum Orbes striatum, transversim sulcatum.
56. Buccinum, parvum, Claviculâ longissimâ, ore longo angusto, secundum Orbes tenuissime striatum, transversim sulcatum.
57. Buccinum, parvum, Claviculâ longâ, tenuissime secundum Orbes striatum.
58. Buccinum, parvum, Claviculâ & Rostro longis, Orbibus ad Claviculam tuberculatis.
59. Buccinum magnum, Claviculâ longâ, cujus Orbes plani sunt, & minime pulvinati, labro latissimo, & usq; ad Apicem Claviculæ producto.
60. Buccinum Claviculâ & Rostro longis, primo Orbe in Limbum acutum, juxta Claviculam, excurrente.

## APPENDIX. 1722.

61. Buccinum juxta Orbium Ductum striatum, & muricatum, Claviculâ & Rostro brevibus.
62. Buccinum cancellatum.
63. Buccinum Echinatum.
64. 3 Glossopetræ, 5 Canum Marinorum Dentes.

## APPENDIX alter. 1724.

65. Ostrei cujusdam Valvula superior.
66. Ostrei forsan Anglici, Valvula inferior.
67. Pectunculus.
68. Testudinis, alicujus Americani, Testæ Segmentum, Effossum ex Clivo Hordelliano.



*Rerum aliquot Fossilium in Itinere Septentrionali D. GROOME & D. MEULIS Anni 1700. Collectarum,*

MANTISSA ALTERA.

*Exhibens Conchyliâ Marina varia in Summorum Montium Pendle, Ingleborow & alior. verticibus: in profundissimis Fodinavum latebris: & ex Agris Nunnington, Bugthorp, alijsq; à Cl. V. M. Listero recensitis in Lib. de Conchitis, & in Actis Philos. N° 76.*

p. 103. **A** Piece of grey Stone, with several Impressions of striated *Concha Anomia* in it. Found on the very Top of *Pendle-Hill*, about 20 Yards North of the Beacon. This is the common Stone of the Hill; in all which there are like Impressions in great Numbers.

p. 104 & 105. Two Pieces of Stone, each having the Impression of a pretty large *Bivalve* upon it. These were taken, from amongst many more with such Impressions, out of Stone, within a few Yards of the Top of *Pendle-Hill*.

p. 106. A Piece of Stone, with the Shell of a pretty large *Bivalve* upon it, and Joints of many small *Entrochi* in it. Struck out of the Rock, within 60 Yards of the Top of *Ingleborow-Hill*; in which these Marine Bodies are pretty plentiful.

p. 107 & 108. Two small Pieces of the same Stone, each with the Impression of a *Bivalve* upon it. From the same Rock.

p. 108\*. A Piece of Stone, from still the same Rock, with a great many *Entrochi* in it, and the Impression of a Shell of a *Bivalve* upon it.

p. 109 & 110. Two Masses of Stone, very thick set with Shells; and *Entrochi*, broke off the very Top of a Rock, about 20 Yards in perpendicular Height, near *Engleton* in *Yorkshire*. All the Rocks thereabouts are pretty thick set with Shells; but few of them fair, or so well preserv'd as they are commonly found in some other Countries.

p. 110\*. Another like Mass; from the Top of the same Rock.

p. 111. A Mass with several Shells, and two very large, in it. Found, amongst many more of like sort, on a Hill by the *Allum-Mines*, at *Kirby on the Brow*, *Yorkshire*.

p. 112. Another, with Shells and Impressions. Found on the side of *Hildern-Hill*, near *Scarborough*, *Yorkshire*.



p. 113. Impressions of several fulcated *Concha Anomia*, on Stone; found on the East-side of *Hacknesh-Head*, a high Hill, near *Scarborough*, *Yorkshire*.

p. 114. Impressions of Escalop-Shells. Found near the former.

p. 115 & 116. Two Masses, very thick set with Shells, out of a Stone-pit at the top of *Hacknesh-Head*. All the Stone in this Pit, and about the Hill, is very full of Impressions, and of Shells, tho' few fair, or well preserved.

p. 117. A Piece of Stone, with the common Oyster-Shell in it, taken out of a Stone-pit at the Top of a high Hill near *Silfoe*, *Yorkshire*.

p. 118. Impressions of various Kinds of *Bivalves*, on Stone. Found in *Silfoe-Gills*, *Yorkshire*.

p. 119. A Mass of Stone, full of Shells. Found under the Moss-Earth, amongst others of like sort, at the very Top of *Suffield-Hill*, which is very steep and high. 'Tis not far from *Hacknesh*, *Yorkshire*.

p. 120, 121. Two Masses, very full of Shells. Found on the Top of a high Hill, near *Silfoe*, *Yorkshire*. There lie of these loose Masses of Stone, immediately under the Turf-Earth, great Numbers. They are laid bare by the Diggers in the Turf-pits.

p. 122. Found in the Road near *Pickering*. A *Strombites*.

p. 123. Found at the bottom of *Nunnington-Quarry*, *Yorkshire*. A *Nautiloides*.

p. 124. A Stone, thick set with Ova of Fishes; having likewise part of the Shell of a *Pecten* adhering to it; but neither so fair as commonly they are found in many other Countries. From the bottom of the same Quarry.

p. 125. An Impression of a *Bivalve*, on Stone. From the same Quarry.

p. 126. Part of an *Ammonites*. From the Bank of the River, near *Bugthorp*, *Yorkshire*.

p. 127. A Coarse Spar, in form of a *Tellina*, very large. From the Bank of the same River.

p. 128. A Mass of Stone, having had several Shells in it, which are now perished and gone: but their Impressions, and the void Spaces they heretofore fill'd, are very observable. Found near the Top of a high Hill, two Miles West of *Stokefley*, *Yorkshire*.

p. 129 The Impression of a large Shell, on Stone, very thick set with *Entrochi*. From *Thorp-Edge*, *Richmondshire*.

p. 130. Some slight Remains of Shells, and Impressions, seeming to be of that sort which Dr. *Lister* calls *Pectinites Membranaceus, dense striatus*. Hist. Animal. Angl. Pag. 243. Tab. 9. Tit. 49. Found in the Rubbish of a Lead-Mine of Col. *Byerly*, on *Richmond-Moore*. Conf. p. 53, 54. *supra*.

p. 131. An Impression of a *Bivalve*. Found loose on the side of a high steep Hill, near *Mask*, *Yorkshire*.

p. 132. A Mass of Stone, with Shells and Impressions. Found near *Newcastle upon Tyne*.

p. 133. Impressions of two *Bivalves*, on a Piece of black Stone, with small Sparks of *Mica* in it, being Part of a Stratum of Chiver that lay 71 Yards deep, at the bottom of a Lead-Mine, (farm'd by Mr. *Langstaff*;) on *Moulder-side-Hill, Arkendale, Yorkshire*.

p. 134. A Piece of the same sort of Stone, with the Impression of a large *Bivalve* upon it. Found at the same Depth, in the same Mine.

p. 135. Part of a blackish stoney Nodule, with Impressions of several *Bivalves* upon it. It lay 40 Fathom deep in a Coal-pit at *Benwell Coalery, near Newcastle*.

p. 136. Part of Stone of an Iron-grey Colour, with extreme small Sparks of *Mica* in it, and an Impression of two small *Bivalves* upon it. Found likewise 40 Fathom deep, in the same Coal-pit.

p. 136\*. An Impression of a *Bivalve* upon a very hard brown Stone, being part of a Stratum that lay 40 Fathom deep, in a Coal-pit in *Benwell Coalery, by Newcastle*.

p. 136\*. An Impression of a *Bivalve*, of a Species different from the foregoing, upon a dark grey Stone; the Stratum of which lay somewhat deeper than the former, in the same Pit. There were many more Impressions, in both this and the above-mention'd Stratum.

*De Testis aliisq; Animalium Marinorum Partibus incerti  
Generis,*

MANTISSA TERTIA.

p. 137. Part of a testaceous Body, with Fibres running diametrically cross it, in manner of the *Pinna Marina*. From the great Chalk-pit at *Greenhithe, Kent*.

p. 138. Another. From the great Chalk-pit at *Northfleet, Kent*.

p. 139. Another. *Greenhithe, Kent*.

p. 140. Another. *Northfleet, Kent*.

p. 140\*. Another. *Purfleet, Essex*.

p. 141. Another. From a Chalk-pit, not far from *Epsom, Surrey*.

p. 142. Another. From a Chalk-pit near *Craydon, Surrey*.

p. 143. Another. From a Chalk-pit near *Charleton, Kent*.

p. 144, 145. Two others. From a Chalk-pit near *Rygate, Surrey*.

p. 146, 147, 148. Three Pieces. *Northfleet, Kent*.

p. 148\*. A large Piece of a Body of the same Kind, as also several smaller Pieces, immers'd in a black Flint. Found betwixt *Northfleet and Greenhithe, Kent*.

p. 149. A Piece of another. From a Stone-pit on *Bullington-Green, near Oxford*. Mr. *Lhwyd* sent it with the Name of *Trichites Plotij Hist. Oxon. Veneris Crines forsan Plinio*. These two Writers, Dr. *Plot*, of meer Simplicity, and Mr. *Lhwyd*, of Design, darken Council by Words; Job xxxviii. 2.

p. 150. A small Piece, struck out of a Stratum of Stone, in *Burlip-Hill*, betwixt *Girencester* and *Gloucester*.

p. 151. A Piece, less, and thinner; out of a Stone-pit, near *Risington*, *Gloucestershire*.

p. 152. An Impression of a Fragment of this Body, in a grey Flint, *Hampstead-Heath*.

p. 153. An Impression, seeming to be of that part of this sort of Body where the Valves are, on a Flint. Found near *Dulwich*, *Surrey*.

p. 154. A Piece of a Shell, thick set with small *Papillæ* all over the Outside of it. From the great Chalk-pit at *Greenhithe*, *Kent*.

p. 155. Three or four small oblong boney Bodies, lying parallel to each other, on a Piece of Chalk. *Northfleet*, *Kent*.

p. 156, 157, 158. Three Bodies, with Sulci and Ridges alternately on the Surfaces, so as very much to resemble Segments of *Ammonitæ*, only one of them is streight; and the other two, tho' somewhat inflected, not near so much as the *Volutæ* of the *Ammonitæ*. The streight one is parted at a Suture, and exhibits a Diaphragm, unequal, and like those of that Body. *Falkstone-Cliffs*, *Kent*.

p. 159. An oblong round Body, incircled with annular Ridges and Furrows alternately. This is one of those Bodies that are call'd, tho' improperly, *Screw-Stones*. From a Lead-Mine, near *Worksworth*, in the *Peak*, *Derbyshire*.

p. 160. Six, lesser. From the same Mine.

p. 161. A Mass of Stone, with several of these Screws, and a pretty large Shell of a *Bivalve* in it. From the same Mine.

p. 162. From the same Mine.

p. 163. From the same Mine.

p. 164. Seven Screw-Stones. *King's-Weaton*, *Gloucestershire*.

p. 165, to 171. Inclusive. Seven Masses of Stone, with Screws in them. *Ibid*.

p. 172. Another, with the Screw in it, seeming to be compressed by some external Force. *Ibid*.

p. 173, 174. Two Screws, taken out of the Stone of the eleventh Stratum of one of Col. *Byerly's* Lead-Mines, on *Richmond-Moore*. They were pretty thick in the Stone of this Stratum, which lay about 30 Foot deep.

p. 175. A Piece of the Stone of this Stratum, with Screws in it.

p. 176. A Limestone, of a grey Colour, and very hard; having in it some small *Entrochi*, and several Screw-Stones. From *Overton*, in *Scarfsdale*, *Derbyshire*.

p. 176\*. A Screw-Stone; found, along with *Entrochi*, at *Moreland*, in *Westmorland*. Dr. *Nicholson*, now Lord Bishop of *Carlisle*.

*De Conchyliis Fossilibus aliqua Injuria affectis, quippe  
attritis, erosis, compressis ;*

## MANTISSA QUARTA.

### SECTIO I.

*Conchyliis Maris astu & agitatione antequam Massa Saxeæ  
mandarentur abrasa attritaque.*

p. 177. This, and the four following, were given me by Mr. Jackson. Vid. c. 29. *supra*.

p. 178. Mr. Jackson. p. 179. Mr. Jackson. p. 180. Mr. Jackson.

p. 181. Mr. Jackson.

p. 182. Out of a Mass of Stone, in a Quarry near Burford, Oxfordshire.

p. 183. Out of a Stratum of Stone, in Burlip-Hill, Gloucestershire.

p. 184. Found in a Stratum, consisting chiefly of Sea-Shells of various Kinds; some of which were worn, as this is, underneath a Stratum of solid Stone, above 40 Foot deep, in the great Quarry at Barrington, Gloucestershire.

p. 184\*. From a Stone-pit, near Abbington, Berkshire.

p. 184\*. Out of a Mass of shatter'd lax Stone, in a Quarry in Tangly-Fields, Oxfordshire.

### SECTIO II.

*Conchyliis antequam Saxo committerentur à Vermibus erosa.*

p. 185. This Mass was very large, and had many Shells in it, of which none had the least Sign of being eroded, besides this Patella. Mr. Jackson. Conf. N<sup>o</sup> c. 29. *supra*.

p. 186. Barrington. Found in the same Bed of Shells with p. 184. *supra*. I saw but one, besides this, that had any Marks of these Depredations upon it; tho' I examin'd great numbers of them.

p. 186\*. Out of a Mass of Stone, very close and compact, but with Vitriolic Salts in it, which began a little to yield and shoot, so that the Stone shatter'd to pieces in breaking, and the Shell was easily got forth and clear of it. These Salts would annoy and offend any Insect that should attempt preying upon the Shell whilst in it: besides 'twas so closely beset with Stone, that none could well come at it. So that the Erosions that are in this Stone were made before the Shell was reposit in the Stone. Gatcomb, Gloucestershire.

### SECTIO III.

*Conchyliis à vi quadam externa compressa & distorta.*

p. 187. From a Stone-pit near Appleby, Lincolnshire. Mr. Morton.

p. 188. *Concha anomia*. Out of a Mass of Stone in Randcomb-Park, Gloucestershire.

p. 189. Out of a Stratum, made up chiefly of Ova of Fishes, and various Sea-shells, lying 12 Foot deep. Sherborn, Gloucestershire.

p. 190. Out of a Mass, of like sort, on *Shotover-Hill, Oxfordshire.*

p. 191. Out of a Stratum of Stone 24 Foot deep, in *Hampnet Quarry, Gloucestershire.*

p. 192. A Pyrites, formed in a turbinated Shell, compress'd. From the Cliffs near *Minster, in Sheppey-Island, Kent.*

p. 193. A grey Flint, form'd in the Shell of a galeated Echinus that was compress'd and broken, the Marks of which are apparent upon the Flint. Found on the Downs, near *North-Tudworth, Wiltshire.*

### CLASSIS XIII.

#### *Fossilia incognita.*

Most of the Bodies of this Class were collected when first I entered upon these Searches: and the following Description of them, drawn up when I was not much vers'd in these Studies. Since that, Observations that I have made on other like Bodies, that I have found, have convinc'd me that several of these belong to the vegetable Kingdom. Those Observations are set forth in the Descriptions of the Bodies in the *Catalogue of the additional extraneous English Fossils. N<sup>o</sup> h. 24. & seq.*

q. 1. A Stone of a very dark brown Colour, 6 Foot  $\frac{1}{2}$  in length, of a roundish Figure, but somewhat flat, being 4 Inches in breadth, and 2 in Perpendicular. It is not streight, but undulated or flexuous, and with large Flexus, there being but one entire and part of another in this whole Length. It rises into Tubercles over the greatest part of its Surface. 'Tis broken into 10 pieces, and was originally longer, the rest being not to be got out of the Stone of the Stratum in which it lay. There are also two pieces more, but flatter and broader than these: and likewise two pieces of that Stone in which this Body lay. From a Quarry at *Haigh, Lancashire.*

q. 2. A Cylindric Body three Inches in length: and half as much in Diameter. 'Tis of a ferruginous Colour, striated longways, and surrounded with six circular Sulci, placed at near equal Distances from each other. Found loose on *St. Vincent's Rock near Bristol.*

q. 3. Another Body, of like figure, but thicker: and compos'd of a brassy shining Pyrites. From the *Canal Coal-pits at Haigh, Lancashire.*

q. 4. Another Pyrites, not so thick, nor so round, appearing as somewhat compress'd. Out of the same Coal-pits.

q. 5. A long Body round and striated. This is made up of a pale brown gritty Stone with very small Sparks of Micæ amongst it. From a Stone-pit, near *Haigh, Lancashire.*

q. 6. Another of a darker brown Colour and a more flat or compressed Figure. From another Stone-pit, near *Haigh.* There appear on several parts of the Surface of this, and the two following, Flakes of a Matter that is black, glossy, and much resembling Pitch; but they are only Remains of a Skin or Cortex with which these



these Bodies have been apparently entirely invested, tho' now broken and shook off.

q. 7, 8. Two pieces of another of the same sort and from the same Pit.

q. 9. Another less, but rounder. From another Pit near the same Town.

q. 9<sup>x</sup>. A Segment of a Body 7 Inches long and 3 in Diameter, a little flat and tapering, with Striæ very thick, running parallel to the length of it, and 4 annular Striæ surrounding it. These Annuli resemble Joints of the Stem of some Plant of the Cane-kind: and the Body appears like part of the Stem of some Plant, tho' it be composed of a coarse gritty brown Stone, with Micæ in it, of the very same sort with the Stone of the Quarry in which it lay. *Whitehaven, Cumberland.*

q. 10, 11, 12. Three others, less, and flatter. From a Stone-pit, near *Haigh, Lancashire.*

q. 13. From the same Pit with q. 7, 8.

q. 14. Part of another, with a piece of the Stone in which it was lodg'd. From a Coal-pit near *Haigh, Lancashire.*

q. 14 ○. Another, found, in Shiver, lying over the Coal, at *Lanelthy, Wales.*

q. 14<sup>x</sup>. Another, less, but rounder. Out of a Quarry near *Whitehaven, Cumberland.*

q. 14<sup>\*</sup>. Another, with part of the Stone in which 'twas lodg'd. Found near *Whitehaven*, in the same Quarry with q. 9<sup>x</sup>. *supra.*

q. 14 †. Another, found in a Stratum of Stone of another Quarry near *Whitehaven.*

q. 14 ‡. Another. A Body in Figure approaching a Cylinder, only somewhat compress'd; being 1 Inch  $\frac{1}{4}$  Diameter one Way, and only 1 Inch the other. 'Tis striated lengthways, and surrounded with a Ring, crossing those Striæ after the manner of a Joint. The Body was originally 2 Foot long: and had several like Joints, each about 2 Inches distant from other. Found in a Stratum of gritty Stone\*\*, near *Ashover in Scarfdale, Derbyshire.* 'Tis remarkable that several of the Bodies in this Class, tho' found in Places so distant from each other, are, besides their exterior Figure, composed of much the same sort of Matter; which is a brown gritty Stone, with small Spangles of a white silvery Tale in it.

q. 14 §. Found above the Coal in the Coal-pits of *Houghton le Spring*, in the Bishoprick of *Durham.*

q. 14 ✱. Out of the same Coal-pit.

q. 14 †. Out of still the same Coal-Pit.

q. 15. A grey Stone, flat; fulcated with parallel Furrows long-ways of it. From a Quarry near *Haigh, Lancashire.*

\*\* See a Sample of it in the Catalogue of *Addit. English Foss.* fil. b. 2.

q. 16. Another, that was contiguous to the former; and tallies with it.

q. 16<sup>x</sup>. Another, the Surface not quite so plain, but somewhat rounded; with Remains of a black, shining, thin Cortex; with which the whole Surface, seems to have been cover'd. *Lanelthy-Coaleryes, Wales.*

q. 17. An Iron Stone; black, flat, and wrought over one Surface very finely, with a strange cancellated Work. *Mr. Chetwyn, Staffordshire.*

q. 17<sup>x</sup>. A pale brown Stone, with small Micæ of Talc in it, and a cancellated Work upon it; not much different from that of the foregoing, q. 17. This was found in the side of a deep Way on *Boulton-Moor, Yorkshire.*

q. 18. A Piece of grey Stone, having somewhat like a Cancellated, or Net-work upon it; but smaller and finer. From a Quarry in *Haigh, Lancashire.*

q. 19. Another with like Work upon it. This was Part of the former, till broke off from it.

q. 20. A Piece of grey Stone, with a black Film upon it, pretty thick set with small Studs, rank'd in a kind of Quincunx Order; and two larger, appearing in manner of Breasts, each having a Cavity in the middle of it. From the same Quarry with the foregoing.

q. 21. A Piece struck off the former, bearing the Impressions of it, and tallying with it.

q. 22. Another Piece, the Surface rising into Rhomboid Studs, placed in a Quincunx Order. From a Stone-pit, near the former. I have seen Fruits of the Fir-kind, from our *West-India* Plantations, that this Body nearly resembles.

q. 23. A Piece struck off the precedent, and tallying with it.

q. 24. A black Flint, cover'd with a thin grey Crust. 'Tis broken, and within there appear several oblong Protuberances, standing pretty regularly in a Quincunx Order: There are 7 or 8 of them in a Line, and 8 or 9 Lines. They stand all upon the same Plane, which rises and swells up a little in the Middle, and seems to extend further into the Body of the Flint. The Protuberances, are grey; the Plane, or Ground on which they stand, whitish: They are near as big as a Grain of Barley; and those of the same Row are placed at about  $\frac{1}{12}$  of an Inch distant from one another. There seems to have been some extraneous Body inclosed in the Flint to which this Signature is probably owing; but what that is, whether the Skin of some Fish, or what else, I have not yet been able to discover. 'Twas found in the Road betwixt *Greenhithe* and *Northfleet, Kent.* The Studs appear manifestly to have been broken; and those of one Plate tally, and have been continuous with those of the other.

q. 25. A Piece of Chalk, having one Surface flat, of a brown Colour, with small Cavities ranked in near a Quincunx Order upon

upon it: In the midst of each Cavity is a Tubercle, or Stud. This was from *Greenhithe, Kent*.

q. 26. Another from the same Place. Part of the Surface of this rises into smaller Studs, and is without any Cavities.

q. 27, 28. A Piece of Chalk, split in two. The Surface of one rising into large round Tubercles, standing close to one another; and that of the other, having Cavities answering them. From *Northfleet in Kent*.

q. 29. A brown Stone, having in it many Silvery *Mica*, or Talky Sparks. On one Surface of it are Cavities, placed in a Quincunx Order; in each whereof, stands a Papilla, with a small Cavity in the middle of it. Found on the side of a Hill near the River, by *Sherborn, Gloucestershire*. See what I have noted concerning the Origin of these Bodies [q. 29, 30, 30<sup>x</sup>.] in the Catalogue of the additional extraneous *English Fossils*, N<sup>o</sup> b. 31. & seq.

q. 30. Another, with like Cavities and Papillæ upon it. *Ensum, Oxfordshire*.

q. 30<sup>x</sup>. Another, found in a Gravel-pit near *Cambridge*.

q. 31. A grey Spar, with shallow round Cavities on one Surface of it. Part of the Intervals are plain; the rest wrought, with a kind of Net-work. From the great Limestone-pit, near *Dudly, Staffordshire*.

q. 32. A Quincunx, or *Reticulum*, on a grey Stone. Found in the Highway, near *Haigh, Lancashire*.

q. 33. Found together with the former.

q. 34. A *Fasciculus* of Bodies, round, about  $\frac{1}{2}$  of an Inch in Diameter, hollow, and parted into numerous Cells by means of Diaphragms, thick set throughout the whole Length of the Body. Some of these Bodies are sub-divided, or branched. As I remember, the Twigs of the Walnut-Tree are of this very Constitution. This was found in a Gravel-pit near *Farrington in Berkshire*, and given me by Mr. *Stonestreet*; who says, 'tis the same with that which Mr. *Lhwyd* calls *Alcyonium Fossile per-rusum rubiginosum*. *Lythophyl.* p. 6. N<sup>o</sup> 99.

q. 34<sup>x</sup>. Another like Body. *Witney, Oxfordshire*.

q. 35. A Piece of Stone, Part of a dark ferruginous Colour, appearing to hold Iron: the rest of a dark grey. This last is composed of Flakes, that part from each other without much difficulty, and are placed edgeways, and parallel to each other: They are thick set with undulated Lines running a-cross them on both sides each Flake. The Body appears to have been a Nodule, and the Iron-Stone to have been the Center; the Flakes arising from it, and rending all round to the Surface, which is of a dusky yellow Colour. Found in a Brook near the River *Duglas, in Lancashire*.

q. 36. A plumose stoney Spar, that lies next the Iron-Stone got here. On *Hunwich-Moor*, near *Bishop's-Aukland*, Bishoprick of *Durham*.

## CLASSIS XIV.

*Cochlea Terrestres ex Telluris Visceribus eruta.*

[A] r. 1. Two Snail-Shells, found, amongst several others, in grey Marl, about 10 Foot deep, in a Field near the Church, at *Northleach, Gloucestershire*. They are of that sort that Dr. *Lister* exhibits, *Hist. Conchyl.* N<sup>o</sup> 54. and are found at this Day living in most Parts of *England*.

## CLASSIS XV.

*Musculi fluviatiles ex Telluris Visceribus eruti.*

There are frequently found a sort of Muscle in the Allum-Mines at *Whitby* in *Yorkshire*. Several of them are exhibited, N<sup>o</sup> f. 567, to f. 571. *supra*. They are very like one sort of the *English* River Muscles.

Of the *Cochlea fasciata vivipara fluviatilis*. Conf. N<sup>o</sup> p. 57. *supra*.

[A] f. 1. This is a common *English* Muscle; and is exhibited by Dr. *Lister*, *Hist. Conchyl.* L. 2. N<sup>o</sup> xi. under the Title of *Musculus latus maximus & tenuissimus à caruleo viridescens fere palustris*. 'Twas dug up in a Marl-pit, at *Hunton*, in *Kent*, along with several Sea-shells, mention'd *Philosoph. Trans.* N<sup>o</sup> 155. and sent me by Dr. *Hatley*. I wrote to him to know whether he was positive it was dug up there. And by Letter, *January* 20, 170<sup>2</sup>/<sub>3</sub>. he assures me it was dug up with the rest, upon his certain Knowledge.

## APPENDIX.

Various Bodies, recent, and of modern Growth, serving to match and compare with, or some other way to explain and illustrate the Antediluvian; digg'd out of the Earth, and preserv'd in my Collections, chiefly of extraneous Fossils.

## PREFACE.

From the Time that I began first to collect and make Observations upon the Shells, and other adventitious Bodies, that are digg'd up at Land, I took great pains carefully to compare them with those at this day produced at Sea: and to preserve all such of these latter, as match'd the Fossil ones. They are amongst the rest of my Collection of Sea-Shells, *English* and *Foreign*: and there are besides, in my Repository, various Jaws of Sharks, and other Sea-Fishes, having the Teeth in them, that exactly match these found in the Earth: and serve to demonstrate that these likewise are genuine, and the real Teeth of once living Fish.

In like manner there are, in my Collection of dry'd Plants, many that match those inclos'd in Stone; particularly of the most common, the Fern-kind; of which I dry'd and preserved many Samples collected about the End of May, the Time that the Deluge, coming

coming on, put a stop to the Growth of the Vegetables then in being \* ; some Remains of which we now find inclos'd in Stone. My Design was to shew the Agreement of the Vegetables growing in that Season, now, in our Times, with those so found lodg'd in the Earth; as to their Growth, Condition, Constitution, and all other Respects: and any one who shall, as I have done, make an accurate Collection of them, will find these and these perfectly alike, allowance being made for the Change that some of the Fossil, particularly the Leaves, have undergone, either during the Time that they were sustain'd in the Water of the Deluge, or since they have been reposit'd, for so many thousands of Years, in the Earth. I am most inclinable to believe, that the greater of the Leaves underwent the Change, they now shew, in the Deluge; after the manner of some other Bodies, of which an account is given above, in the Preface to the Catalogue of the extraneous English Fossils: And this may serve to explain why the Leaves of the Fern-kind are, above all others, so frequent and obvious; some sorts of Leaves being, doubtless, more susceptible than others of such Alteration, whereby they were fortify'd and strengthen'd; without which, Bodies so tender, as Leaves of Plants are, would scarcely have endur'd and been preserv'd, through so many Ages, down to our Times.

As to the Bodies in this Appendix, they are only a few, of such as I judg'd proper to have at hand, and ready to shew to any one that might happen to have some Dissatisfaction, or Doubt, of the Reality of the like Bodies digg'd up at Land. Which indeed most of the Virtuosi had, when I first enter'd upon these Studies †; till the Bodies in my Collection convinc'd them, by giving ocular Proof of their true Origin and Constitution, and demonstrating the Vanity of the late Speculations, and Notions, that these were not of Marine Extract, but mere Stones, and Natives of the Earth.

#### A P P E N D I X.

*The extraneous Fossils, Shells, and the rest, compar'd with those produced at this Day.*

1, 2. Two Cones that grew, together, on the same Branch of the *Pinus Sylv. Raj.*, or Scotch Fir, in Trinity-College Walks, in Cambridge. They were gather'd in the beginning of June 1697 ‡. They are of different Years: and exactly match those digg'd out of the Peat-Marshes, Cheshire. See the *English Catalogue*, b. 70,

\* Gen. vii. 11. Nat. Hist. Earth, Part 3. Sect. II. Consect. 5. & Part 6. versus Finem.

† Confer. Mr. Ray's *Discourses of the Deluge*, 8<sup>o</sup>. Lond. 1693. Pag. 127.

‡ The Deluge, which put an end to the Growth of these and all other Vegetables, came on near this Time, viz. towards the End of May. Nat. Hist. Earth. Part 3. Sect. II. Consect. 5.



71. The younger, being succulent and tender, is found in the Marshes, commonly somewhat perish'd and decay'd; this here, being kept dry, is well preserv'd.

3,4. Two other like Cones, gather'd off the Tree in the Physick-Garden at *Chelsea*, 23 June 1711.

5. A Piece of Fir, with the Knots in a Quincunx Order. *Petworth, Sussex*. This Order is observ'd in many Plants, and particularly the Fossil. See *The Catalogue of the additional, extraneous English Fossils*, h. 29. & seq.

6. *Pinus domestica, vera*, with the Knots in a Quincunx Order.

7. A Piece of Spray Wood, shrunk, and crack'd in the charring, much in the manner of the *Ludus Helmontij*; and serving to illustrate what is deliver'd concerning the Origin of the Cracks in that Body, in the *Catalogue of the English native Fossils*, \* d. 40.

8,9. Common Brick, broken into two Pieces, discovering, on the one, part of the Leaf of the *Filix fœmina vulg.* On the other, the Impression of it, after the manner that the Leaves of Fern, and other Plants, are found, in breaking some kinds of slatey Stones. See the *Catalogue of the English extraneous Fossils*, Class 1. There might be much better Impressions of Leaves taken in finer Clay, to be afterwards bak'd: and better still in Plaster of *Paris*.

10. A Branch of a Stellar Porus, of the same Species with that dig'd up at *Harborow, Leicestershire*; in the *Catalogue of the native English Fossils*, e. 12.

11. A Coralline *Astroites*, resembling that Fossil *Astroite*, in the *Catalogue of the English native Fossils*. e. 94. but having the stellar Cavities, on the Surface, somewhat deeper. Drawn up out of the Sea near - - - -

12. A Coralline Body, radiated, and stellated, the Stars prominent, and rising into Points, or Apices, in manner of that Fossil Coralloid Body in the *Catalogue of the native English Fossils*, e. 84.

13. A white Coralline Body, with parallel stellar Pores running through it. Found at *Pyrton-Passage*, on the *Severn*, and probably was part of some Coral flung out of Ships with Ballast. Given by Mr. *Edward Lhwyd*, who, in his *Lithophyl.* N<sup>o</sup> 160. p. 21. T. 2. takes this to be the *Millepora* of *Imperatus*, but erroneously. It may serve to confirm and illustrate what is deliver'd of the Fossil Coralloid *Astroite*, *Catalogue of the English native Fossils*, Class 5. Part 5.

14. A Coralline Body, compos'd of a *Fasciculus* of *Fistulae*, or Pipes; in some Parts stellar, in others only striated. 'Tis of a Constitution nearly approaching that of Spar. From the Coasts of *Barbadoes*. This is the very same Species with that in the *Catalogue of the English native Fossils*, e. 113. only the Pores of that are larger.

15, 16. Two Coralline *Fungi*; from the Shores of *Guernsey*. They nearly resemble the Coralline Bodies found in the Chalk-pits  
of

of Kent, Essex, &c. See *The Catalogue of the English native Fossils*, c. 49.

17. *An Retepora, S. Eschara Marina Fer. Imperati?*

18. That call'd the *Coffin-Bone*, in the Hoof of a Horse. There is one of these Bones, digg'd up at *Wirtemberg*, in the *Catalogue of the foreign extraneous Fossils*, v. 1.

19. Five Vertebres, of some kind of Fish, cohering, and join'd.

20. One single Vertebre, of some Fish, found on the Shores near *Moncafter, Cumberland*.

21. Another; found along with the former.

22. Another. 23, 24. Two others.

25. The boney Palate, of some sort of Fish, probably related to the *Pastinaca Marina*, of which there's an account given, by Dr. *Sloane*, *Philos. Trans.* N<sup>o</sup> 232. p. 674. This Palate was found on the Shores of *Barbadoes*. It consists of numerous Parts, somewhat inflected, join'd to each other in manner of a Suture. 'Tis much worn in one place, by grinding of the Food, probably Shell-Fish, that the Creature eats. I have observ'd something of like sort, in boney Palates, found in the Chalk-pits of *Kent* and *Surrey*, describ'd in the *Catalogue of the English extraneous Fossils*, N<sup>o</sup> 100. & seq. Dr. *Sloane*, there, mentions Parts of the Tongue of the *Pastinaca Marina*, digg'd up in *Maryland*. I have receiv'd several like Parts that were digg'd up, together with those, and are describ'd in the *Catalogue of the extraneous foreign Fossils*, p. 105 & 106. that, trusting too confidently to him, I took to be of the *Pastinaca Marina*. But, upon a Review, I now rather judge them to be Parts of a Palate, of the Kind of this here describ'd.

26. The under Jaw of the Drum-Fish; from *Virginia*. See *Fosselyn's New-England Rarities*, p. 25. The single Teeth of this Fish are sometimes found in Stone-pits, along with those of the *Lupus Marinus*; both passing under the Name of *Busonita*, or *Toad-Stones*. See great Variety of these in the *Catalogue of the extraneous English Fossils*, Class 10.

27. This was sent me for the lower Jaw of the *Lupus Piscis*, or Sea-Wolf. Teeth of these sorts are common in the Quarries of *Oxfordshire* and *Northamptonshire*. See the just now cited *Catalogue*, Class 10.

28. Teeth, out of another like Jaw.

29, 30, 31, 32, 33, 34, 35, 36, 37. Several like Jaws, sent by *Agost. Scilla*. Some of them he has grav'd, Tab. 2. of his *Littera circa i Corpi Marini, petresicati*. 4<sup>o</sup>.

38, 39, 40. Sent by *Agost. Scilla*. The Teeth in these Jaws are not unlike those call'd by Mr. *Lhwyd* *Plectronita*, but are less.

41. Fishes Teeth, some like the *Plectronita*; others of the Wolf-Fish. Sent by *Agost. Scilla*.

42. Part of the Jaw of a young Shark, thick set with small Teeth. Taken on the Coasts, near *Minehead, Somersetshire*.

43. Part of the Jaw of a Shark, or Dog-Fish. Sent by *Agost. Scilla*.

44. Teeth of various Kinds of Sharks, or Dog-Fish. Sent by *Agost. Scilla*. See his *Lettera circa i Corpi Marini, petresicati*, Tab. 1, 3, 6, 7, 14, 28.

45. Other Teeth of Sharks, taken, I think, on the Coasts of *England*.

46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56. Part of a Jaw of the *Pesce Vacca*, and several separate Teeth; sent by *Agost. Scilla*. See his *Lettera circa i Corpi Marini, petresicati*. Tab. 1, 4, & 27.

57. An *Echinus Ovarius*, from Sea, very fair. There are of this sort digg'd up in *England*, in the Chalk-pits at *Greenhithe*, *Purfleet*, *Croydon*, and in the Quarries of *Clipston*, in *Northamptonshire*, and elsewhere. See *The Catalogue of the English extraneous Fossils*, n. 207, to 210. There are of the same digg'd up at *Messina*, *Malta*, and other Parts abroad. See *The Catalogue of the extraneous foreign Fossils*, §. 65. & seq.

58. Another Species of *Echinus Ovarius*; found on the Isle of *Sheppey*, *Kent*.

59. Another, exhibiting the Teeth, very fair. This Kind is found on the Coasts of *Jamaica*, *Barbadoes*, and other Parts of the *West-Indies*.

60. Great Variety of the Teeth of the *Echini Ovarij*; taken out of several of the Shells.

61. *Aculei*, or Spikes of the *Echinus Ovarius*; sent by *Agost. Scilla*. See his *Lettera circa i Corpi Marini, petresicati*, Tab. xxii. There are of this Sort found in the Chalk-pits in *England*. See the Catalogue of the *English extraneous Fossils*. h. 224.

62. Three short Spikes, of an *Echinus Ovarius*, found on the Shores of *Barbadoes*. There are of this Sort found commonly in the Chalk-pits and Quarries in *England*. See the Catalogue of the extraneous *English Fossils*. h. 217, 218. 223. & seq.

63. Another, larger, from Sea.

64. Another, out of the *Sinus Persicus*, or *Red-Sea*.

65. Another, near 4 Inches long, likewise from the *Red-Sea*.

66. An *Echinus Spatagus*. This Kind is found commonly on the Western Coasts of *England*, *Wales*, and the Isle of *Man*.

67. Another, younger, and less; but of the same Species.

68. Another, of a different Species.

69. Another, very large, *West-Indies*. There is one of this Species, somewhat less, sent by *Agost. Scilla*. See his Book, Tab. 10. Fig. 3. and the Catalogue of the extraneous foreign Fossils, §. 42.

70. Another Species, flat, and thin. It seems to be the same Species with that dig'd up at *Maryland* in the Catalogue of *Foreign extraneous Fossils*. §. 57.

71. Two *Opercula*, commonly called *Umbilici Marini*. Sent by *Agost. Scilla*. He found of these, in the Earth, near the City of *Milazzo*. See the Catalogue of the extraneous foreign Fossils, §. 116. The Tops of these are hollow'd.

72. Two others, with the Tops convex. Sent likewise by *Agost. Scilla*.

73. Tubular Shells, of the *Vermiculi Marini*, of several Sizes? See, in the *Catalogue of extraneous English Fossils*, Classis 1. Part 1. Sect. 1. several digg'd up at Land.

74. Six small *Dentalia*, of which two are striated, the rest plain. Sent from *Sicily* by *Agost. Scilla*. See his Book, Tab. 18. Fig. 6, 7, 8. There are several in the *English extraneous Catal.* Class 1. Part 11. Sect. 2. and amongst the *Hampshire Fossils*, N<sup>o</sup> 21.

75. The common *Nautilus*, or *Nautilus Gracorum*, figur'd by Dr. *Lister*, Tab. 551. This is broke, so as to shew the inward Fabrick of it, and the Partitions. 'Tis commonly digg'd up at Land. See the *Catalogue of the English extraneous Fossils*, d. 1. & seq.

76. *Nautilus, exiguus, albus, pellucidus, teres*, *List. Hist. Conchyl.* Sect. 4. c. 1. N<sup>o</sup> 2. From *Barbadoes*. This is the only Sea-Shell, yet discover'd, of the *Ammonites* kind: and is commonly found on the Coast of *Jamaica*, and the *Bahamas*. There are some of this Genus, among the Fresh-Water Shells, figur'd by Dr. *Lister*, *Hist. Conchyl.* Lib. 2. Sect. 3. But none of them are divided into Cells, by Diaphragms, which the greatest part of the Fossil are.

77. *Nautilus, vacuus, s. non tabulatus, striis paucioribus distinctus. Listeri Hist. Conchyl.* L. 4. c. 2. There is a Species, not very unlike this, in the *Catalogue of the extraneous English Fossils*, d. 21, 22.

78. *Trochus planior, undatim ex rubro radiatus*, *List. Hist. Conchyl.* Lib. 4. Sect. --- N<sup>o</sup> 35. Marget, on the Coasts of *Kent*.

79. *Buccinum bilingue striatum, labro propatulo digitato*, *List. Hist. Conchyl.* L. 4. Sect. 12. N<sup>o</sup> 20. See the *Catalogue of the extraneous English Fossils*, e. 138, 139. Shores of the *Bishoprick of Durham*.

80. *Cochlea Clavicula productiore*. Shores near *Scarborough*. There are in the *Catalogue of the extraneous English Fossils*, e. 75. four of this Species, digg'd up in a Marl-pit, near *Wiggan, Lancashire*.

81. The *Pecten maximus*, *Listeri Hist. Animal. Anglia*, p. 184. or Scallop-Shell. This was sent by *Agost. Scilla*. If it be amongst the Things grav'd in his Book, it must be that Tab. 15. It appears recent, as if found on the Shores, and not as if digg'd up at Land; tho' he sent it with the Fossil Shells.

82. A Pair of Scallops, *English*. 'Tis of the same Kind with those digg'd up in *England*, in the *Catalogue of the English extraneous Fossils*, f. 37. & seq. We have commonly of the same Kind, or very near, from *Barbadoes*.

83. A Scallop, exactly like that in the *Catalogue of the English extraneous Fossils*, f. 37<sup>x</sup>. This was found on the Shores of *England*.

84. Another, *English*, of the same Kind with those in the *Catalogue of the English extraneous Fossils*, f. 90. & seq.

85. Tree-Oysters; from the *Mangrove-Trees*, on the Shores of *Jamaica*. There are found Shells, not unlike these, in the Quarries



ries of Oxfordshire, Gloucestershire, and Northamptonshire. See the *Catalogue of the extraneous English Fossils*, f. 149. & seq.

86. *Ostrea Arborea Marginibus dentatis*. From the Shores of Barbadoes. There are digg'd up, in several Parts of England, Shells of this Kind, or nearly related to it. See the *Catalogue of the extraneous English Fossils*, f. 172. & seq.

87. One of the *Leptopolynglimi*; from Barbadoes. There are of the same Species found on the Shores of England; and also digg'd up at Land. See the *Catalogue of the extraneous English Fossils*, f. 418. & seq.

88. Another of the *Leptopolynglimi*; found on the Shores near Plymouth. This is exactly like that in the *Catalogue of the extraneous English Fossils*, f. 419.

89. *Pectunculus maximus, subfuscus, valde gravis*. Listeri Hist. Conchyl. N° 108. Found near the Mouth of the River Tees, on the Shores of Yorkshire. This Species is commonly digg'd up at Richmond, in Surrey. See the *Catalogue of the extraneous English Fossils*, f. 433. & seq.

90. A Pair of *Pectunculi*, from New-England; where they are called *Clams*. This Species, or one very like it, is digg'd up commonly in England. See the *Catalogue of the English extraneous Fossils*, f. 447. & seq.

91. A Pair, leis, from Barbadoes.

92. A Pair of *Pectunculi fasciati*; from Jamaica. I have seen of the same sort from Barbadoes: and there are of the very same digg'd up in England. See the *Catalogue of the extraneous English Fossils*, f. 480.

93. Another, lesser. Barbadoes. This is little, if at all, different from those in the *Catalogue of the extraneous English Fossils*, f. 482. & seq.

94. A *Pectunculus*, fasciated, and striated. Barbadoes.

95. *Pectunculus albus admodum crassus, sinu, sine sulco, conspicuus*. Lister. Hist. Conchyl. N° 138. From Barbadoes.

96. Another, leis; from Barbadoes.

97. The common Cockle of Dr. Lister, Hist. Conchyl. N° 171. There are of this sort digg'd up in several Parts of England. See the *Catalogue of the extraneous English Fossils*, f. 562. & seq.

98. A *Pectunculus Leptopolynglimus, forma oblonga*. From New-England.

99. A *Cuneus*, from Barbadoes. This has a Hole bored through it by the *Purpura*. See the *Preface to the Catalogue of the Hampshire Fossils*: and the *Catalogue of the foreign extraneous Fossils*, p. 121.

100. Another, from Barbadoes. This Species is also found on the Coast of England; and likewise digg'd up at Land, in various Places. See the *Catalogue of the extraneous English Fossils*, f. 594. & seq.

101. Another, also from Barbadoes. This seems to be of the same Species with them digg'd up near Woolwich, in the *Catalogue of the extraneous English Fossils*, f. 587.



102. A Pair, *English*. There is, somewhere, in my *English Collection of extraneous Fossils*, a Shell of the same Kind.

103. The *Mytilus*, or common *English* Sea-Muscle, with *Balan*i, and the *Retepora* upon it. *Musculus ex caruleo niger*, *Listeri Hist. Conchyl. Anglia*, p. 182. This Kind is frequently digg'd up in England. See *The Catalogue of the extraneous English Fossils*, f. 658. & seq.

104. Shells, found on the Shores near *Minster*, *Sheppey-Island*, worn, and plain'd, by the Agitation of the Sea by Tides and Winds. This may serve to illustrate what is set forth in the *Catalogue of the extraneous English Fossils*, Mantissa 3. Sect. 1.

105. An Oyster-Shell, with numerous Perforations made by Worms. Found on the Shores near----- *Suffex*. This may serve to illustrate what is set forth in the *Catalogue of the extraneous English Fossils*. Mantissa 3. Sect. 2.

106. An Impression, in Sealing-Wax, of the *Ammonitæ*, in the *Catalogue of the extraneous English Fossils*, d. 99.

107. An Impression of a *Concha Anomia fulcata*, in the *Catalogue of the extraneous English Fossils*, f. 337<sup>d</sup>. taken off in Sealing-Wax.

108. An Impression of a *Lapis Judaicus*, or tumid *Aculeus* of an *Echinus Ovarius*. in a greyish Flint; in the *Catalogue of the extraneous English Fossils*, h. 250. Taken off in red Sealing-Wax.

109. An Impression of that in Flint. *Ibid.* h. 251.

110. Lead, cast in a turbinated Shell, I think, that of Dr. *Lister*, *Hist. Animal. Angl.* Tab. 3. Fig. 1. This, and the following were cast with design to shew the Manner of the Formation of the *Cochlitæ*, *Conchitæ*, &c. in the Shells at the Deluge.

111. Another like leaden Cast, I think, in the Shell, Fig. 2. *Ibid.*

112. Another. 113. Another. 114. Another. 115. Another.

116. Another.

117. Lead, cast in the *Pectunculus maximus*, of the same Species with N<sup>o</sup> 89. *supra*.

118. Lead, cast in an *Echinus Spatagus*, of the same Species with those in the *Catalogue of the extraneous English Fossils*, h. 9. & seq.

119. Lead, cast in an *Echinus Galeatus*, of the same Species with those in the *Catalogue of the extraneous English Fossils*, h. 62 & seq.





A  
CATALOGUE  
OF THE  
Additional *English* Native Fossils,  
IN THE  
COLLECTION  
OF  
J. WOODWARD M. D.  
TOME II.



L O N D O N,  
Printed in the Year M.DCC.XXVIII.

# REPORT OF THE

COMMISSIONER OF THE

LAND OFFICE OF THE

STATE OF

NEW YORK

FOR

THE YEAR 1881



ALBANY:

1882.

## P R E F A C E.

**I**T was not without great difficulty that I got so much Time, from my Business, as to put the Bodies, set forth in this Catalogue, into any Method, and range them in the Classes specified in the next Page. Had I had Leisure and Time in my power, that had been done with greater Exactness than it is, or indeed was possible in so great a hurry as I ever am.

Many of these Bodies are very considerable, and some exhibit Phenomena really instructive, and of great signification. There are Remarks of some of these in the Descriptions which I have here drawn up. I had given many more, and been more full and particular in all, had my Affairs comported with that; but this they would not by any means: nor indeed permit me to give any Descriptions at all of several of the Bodies in this Catalogue.

But that is a Defect not difficult to be supply'd by any one who shall have Skill in those things. They are here placed in order, each with those of its own Kind or Tribe; and the Places where all were found, are carefully noted. The Bodies themselves being thus forthcoming, nothing more is needful than an accurate Inspection and Survey of every thing observable in each, for the finishing their Description. Nor is any thing more needful for perfecting the natural History of these Bodies, a Thing of high Importance, many of them being of great Worth, and Use, than the subjecting them to Experiments, and particularly of the Fire; to which end, I have reserved and set apart Duplicates of all the most considerable.

For several of the following Fossils I thankfully own myself obliged to Mr. Scobell; for others to Mr. Hicks; for others to Major Hanbury, Mr. Lewis, and some other curious and intelligent Gentlemen, likewise my Friends, who having Mines of their own, had great Opportunities of supplying me with Samples; which they all did with great Forwardness and Humanity, contributing thereby very liberally to the promoting and encrease of this excellent and useful Part of Natural History.



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## EARTHS and EARTHY SUBSTANCES.

### U M B R E S.

a. 1. **A** Light earthy Substance, seeming to be compos'd of rotten Wood, found in the Cliffs beyond *Limington, Hampshire.*

a. 2. Earth, of a dusky brown Colour, like *Umbre*; found in one of the Company's Mines in *Wales*, call'd *Caninog*. It lay in a Lead-Vein, at the Top, near the Surface.

### Y E L L O W - O C H R E S.

a. 3. An Earth, very fine, yellow; only there are some few Specks of red in it. Found, as this sort commonly is, in the Fissure of an Iron-Mine, in the *Forest of Dean*, near the Ore.

a. 4. Yellow Earth; from *Estemtean*, one of the Company's Works, in *Wales*. This was found, hanging down in Form of a *Stalactites*, from the Top of an antiently-work'd Lead-Vein there. There were more at the Top, and on the Sides of this Work.

a. 5. Brown Earth, seeming to have amongst it black Talc. *Estemtean*. Found in the same Place, and Manner, with the foregoing.

a. 6. A light, friable, ochrous Body; from a Coal-Work of *Billymill-Moore-Level*, in *Northumberland*. Form'd by Water flung forth from an Adit, on the Sides of the Water-Course, on the Surface. 'Tis found commonly incrustated on Sticks, Rushes, &c. in vast Quantities.

#### RED-OCCHRES.

a. 7. A red Earth, very fine; found in an Iron-Mine in the *Forest of Dean*. This sort is found generally near the Ore, in the inclining Fissures. The Workmen save it, and call it *Red-Ochre*.

a. 8. Another, of a deeper Colour; from the same Mine.

a. 9. Another; *Ibidem*.

#### BOLES, CLAYS, EARTHS.

a. 10. Clay, Ash-colour'd, Part of a Stratum, which lay above the Strata of Stone at *St. Agnes-Ball, Cornwall*.

a. 11. Another sort, white, very fine; found in the same Place.

a. 12. Another sort, reddish, and very fine; found still in the same Place: All the three sorts are very plentiful there.

a. 13. A fine white Clay; found, lying confusedly in a Sinus of a Rocky-Cliff, betwixt *Tenby* and *Milford, Wales*.

a. 14. *White Killas*, being the Side of a Vein, in *St. Agnes-Ball, Cornwall*. The Stratum is of a considerable Thickness: and, I think, the same on each Side of the Vein.

a. 15. A grey, unctuous, clayey Matter, seeming to have also Flakes of Talc in it. This sort is found, soft, in small Quantities, in Holes of the Antimony-Vein, *Endellion*, out of which this Sample was taken.

a. 16. Earth, with little white sparry Stones in it. Found in a Vein, in *St. Agnes-Ball, Cornwall*. The Miners call this *Fluken*. 'Tis probable these Stones are only Bits of Spar, broke, and worn thus by the Fall and Motion of Water there. See what I have said on that Subject, treating of Spar; found, with the Iron-Ore, in the *Forest of Dean*.

a. 17. Earth, of an Ash-Colour. Found with a. 22. *infra*, in the Road, midway betwixt *Stainton* and *Hereford*.

a. 18. Blue Clay, part of a Stratum; out of the Pit whence the Marble is got, at *Petworth*.

a. 19. Earth, grey, with a Cast of Green, very stiptick, being Part of a Stratum near the bottom of *Hordell-Cliff*, between *Ll-mington* and *Christ-Church, Hampshire*.

a. 20. A Piece of a grey Clay; from *Polmore-Cliff*, in Mr. *Sco-bell's Estate, Cornwall*.

a. 21. Earth, green, with some Spots of yellow; out of a Vein of Calamin, in *Shippin Liberty, Mendip, Somersetshire*.

a. 22. Earth, variegated with grey, and brown. This was originally all red: but the Water pervading the Cracks, draws off the red that is new them. Found, with a. 17. *supra*, in the Road, midway between *Stainton* and *Hereford*.

a. 23. A Sample of the Soap-Rock, which lies in the Sea-Cliffs, about a Mile South-Weſt from the *Lizard-Point*. The Red is ſoft as Clay, as a great Part of this Matter is. 'Tis all found in Loads, or Veins, of a clayey Stone; much like that, N<sup>o</sup> 6. 60. *infra*.

a. 24. A brown Earth. Found, lying confuſedly in a Sinus of a rocky Cliff, betwixt *Tenby* and *Milford, Wales*.

a. 25. A black Earth. Found in the ſame Place.

a. 26. A black Earth, made into Form of a Ball, and called *Killow*. *Collow* is the Word by which they denote black Grime of burnt Coals, or Wood. Mr. *Cotton* uſes the Word in his *Lucian's Dialogues*----- Being put into the Fire, this emits a ſlight ſulphurous Exhalation. There were ſeveral of theſe Balls, and all had Granules of a white Matter interſperſed. From *Dennis-Mouthy*-----*Wales*.

a. 27. *Killow*, dig'd up in great Quantities like Clay; eight Miles from *Dolgadwin*, Northward, near *Dennismouthy*. [Periſh'd and gone.]

a. 30. A light earthy Subſtance, ſeeming to be compoſed of rotten Wood. 'Tis black and flaky, holding Vitriol. From the Cliffs beyond *Limington, Hampſhire*.

a. 29. Another like black Subſtance. Found near the former.

#### S A N D S.

a. 30. Sand, of a yellowiſh Colour, part of a Stratum, lying above the Strata of Stone. At *St. Agnes Ball, Cornwall*.

a. 31. Grey Sand, with a Species of ſmall Bivalves found in it. 'Tis part of a Stratum waſh'd, and cleaned. From the Cliffs beyond *Limington*.

a. 32. There is a Stratum of Quarry-Stone, upon *Shotover-Hill* near *Oxford*, that lies about 3 Yards deep, and is a Foot thick, with Stone of another Sort, above and below. This very Stratum is in ſome Parts lax, and in Form of Sand; of which this is a Sample. Out of the ſolid Part of this Stratum, I broke a Piece of Stone which is mentioned below, b. 1. That Piece of Stone lay but at the Diſtance of 2 Yards from this Maſs of Sand.

a. 33. Sand, driven off the Sea-Shore by the Winds up into the Country, and concreted there into this Form and Hardneſs. The Inhabitants call it *Kern'd Stone*. This was taken up on the ſide of a Hill, near half a Mile from the Sea: The Place is called *Pyran Sands*. The Sand is held together by a kind of Sparry Matter. I obſerv'd at the bottom of the Rocks thereabouts, Maſſes of Rubble Stones cemented together by ſuch Spar. I ſaw of the ſame ſort of Spar, amongſt Rubble Stones upon the Rocks in *Chaldey-Island, Wales*. This Spar, both there and in *Cornwall*, is drain'd forth of the Rocks. *Pyran Sands* cover and lay waſte a great Tract of Country. There are like Sands

in several other Parts of *Cornwall*. The Corporation Town of *St. -----* is almost half cover'd by these Sands.

## STONES.

### *Stone of Strata.*

*b. 1.* A Piece of Quarry-Stone, from *Shotover-Hill*. There is an Account of it, *a. 32. supra*.

*b. 2.* Free-Stone, of a pale brown Colour; with very small Talky Micæ in it. 'Tis Part of a Stratum, about 3 Foot thick. From *Polriddon, Cornwall*.

*b. 3.* Another Sample, partly of the same, and partly of an Iron Colour, full of Micæ. Part of a Stratum, lying deeper than the former. From the same Place.

*b. 4.* A Piece of a pale brown Stone, holding Iron; part of a Stratum near a Foot thick, extending for several Miles, and lying above the Shells in *Hordell Cliff*; betwixt *Limington* and *Christ Church* in *Hampshire*.

*b. 5.* A reddish Stone, gritty; with Micæ in it. All the Strata are of this Sort; but there are small Cracks in several Parts of them: and near the Cracks, the Stone is rendred white by Insinuation of the Water; this possibly drawing off some of the ferruginous Matter that colour'd the Stone. This may afford a Hint for investigating the Cause of the Variegation of some sorts of Stone and Marble. Found in the Cliffs, on the farther side of the *Severn*, near *Pyrton Passage*.

*b. 6.* A red Stone, with a coarser Grain. *Caldy Island*. A considerable Part of the Island consists of this.

*b. 7.* Stone, grey, with a Blush of Red; from the Mountain *Stix*, in *Cumberland*. 'Tis found in Quantity.

*b. 8.* Stones of a dusky red Colour, from the same Mountain. Found also in Quantity.

*b. 9.* Stone, from a vast Quarry near *Exeter*. All the Stone in this Quarry is of the same Sort.

*b. 10.* A Talky Stone, very like Emery; ponderous and seeming to hold Metal. From the Mountain *Skiddaw*, in *Cumberland*. [Mr. H. has this and the following for Tryal, for Emery.]

*b. 11.* A Stone, very like Emery, found plentifully upon the Moors, North-East from *Skiddaw* Mountain, at the Distance of about 2 Miles. *Cumberland*.

*b. 12.* A stony Mass, of a grey Colour, near white\*. This is of that Sort, that the Tanners call *Growan*. It lies on one side of the Vein in which the Tin-Ore was found, *m. 90. infra*: and is the common Stone on that side. They have three sorts of Stone in *Strata* in *Cornwall*; Free-stone, which they call

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\* There are several little Hollows in it filled; some with a white cretaceous Matter, and some with Spar.



*Moor-stone*, a gritty Stone of various Colours, which they call *Growan*; and a talky Fissil Stone, which they call *Killas*. I neither saw or heard of Peble, Flint, or Fossil-Shell in all the whole County of *Cornwall*.

b. 13. *Killas*, a talky fissil grey Stone, being the common Stone on that side the Vein, in which [-----] was found. In the Interstices of the Flakes, is a grey, chalky, or ochreous Matter, as in the Hollows of the foregoing. This probably is conveyed about, and flung into all the Vacancies capable of receiving it, by the Water; being loose, light, and easily movable, as we find in earthy, ochrey, and other loose Matter in all Mines.

b. 14. A grey, slaty, talky *Killas*; out of a Breast in a hollow Road near *Plymouth*, where there are great Quantities of it: and indeed the whole Country abounds in it.

b. 15. *Killas*, or *Delvin*: 'Tis the common Stone of the Rock in which the Tin Vein, at *Zowan-Coniggan*, lies. 'Tis very hard.

#### S L A T E.

b. 16. Slate, from *Denyball, Cornwall*. This Piece, on three sides, shews the natural Breaches, or Fissures, of the Strata of this Stone.

b. 17. Slate, blue; perhaps the finest in the World. From *Denyball, Cornwall*; where it is got in great Quantity.

b. 18. A Slip of Slate; shewing the Partitions or perpendicular Fissures of the Strata it constitutes. From *Denyball, Cornwall*.

b. 19. A dark grey Slate, used for Coverture of Houses; from Mr. Hicks's Slate-Quarry at *Mullinecke*. The Strata of the Slate here lie pretty much inclining, and are of considerable Extent. The Slate lies from near the Surface down to the Level of the Tide that flows up the River, in the Cliffs of which it lies. What lies underneath is uncertain, they not sinking to the bottom of the Slate. There is a Flexure in this Piece; and there are such in several Parts of the Work, tho' not frequent. Where they are, they run from the Top downwards, as far as I observ'd. There were several of the perpendicular Fissures in this Slate, but narrow like Cracks, and empty. I imagine, that at the same time that the Slate crack'd in one Part, 'twas in others so tough as to abide being bent; by which means these Flexures were probably form'd. I have seen Strata of Coal, near *Lanelthy*, in ----- *Wales*, with like Flexures, but larger. Sometimes they were crack'd at the Angles of the Flexures; the intermediate Mass, tho' parted from the rest, lying obliquely, as in this Specimen. I have observ'd Slate crack'd, with the intermediate Part lying obliquely in this manner, in several Parts of *Wales*, and of *Cumberland*.

b. 20. Another like Sample, from a distant Part of the same Quarry.

b.21. Slate, blue and white; the latter Colour seeming to be brought on by the Water that pervades it. From the Sea-Cliffs, near *Fowey, Cornwall*. These Cliffs consist of this for a considerable Extent. The Miners and People call this *Killas*; as they do any Stone that splits with a Grain. The Backs, Jointings, or cross Partitions [that intersect the Plates of the Slate, some at right and some at oblique Angles; and in all Bearings and Directions] are very thick and frequent.

b.22. A grey Flag. Near *Aywood, Herefordshire*.

b.23. A gritty Flag-Stone, brown, with a Cast of red, thick-set, with a very small Micæ of a white silvery Talc. *Pyrton Passage, over the Severn*. Found upon the Shore.

b.24. Part of a Stratum, grey, lying not far from the Surface; in Mr. *Marriot's* Lead-Mines at the *How*, near *Grinton in Yorkshire*. The Stratum consists of a Slaty Stone. This is composed of several parallel Plates, very thin, hardly exceeding common Writing-Paper in Thickness: There are about 10 in this, and it is not above  $\frac{1}{5}$  of an Inch in Thickness. There are several Micæ, or Flakes of Talc lying chiefly at the Surface of the Plates. I have observed sometimes upon parting the Plates, great Numbers of them loose, lying betwixt the Plates. In breaking of the Strata, I have observed that the Plates are gradually thicker, descending from the Top to the Bottom. In a Stratum of 10 Foot in Diameter, the Plates near the Top were as thin as can be conceived. Those at 3 Foot deep were 2 Inches thick; those at 6, half a Foot: The lowest, near a Foot.

b.25. Brown Slate, composed of numerous infinitely thin Plates. Out of a Trench, in a Wood of Mr. *Harley's*, near his House, by *Aywood, Wales*. Like Masses, but softer, are commonly found upon the Sea-Shores.

b.26. A red Slate, soft, friable, and of scarcely greater Consistence than Earth. There are numerous small Micæ in it: 'Twas Part of a Stratum about half an Inch thick, extending for a vast way. Above and below were Strata of common Clay. In the Road, 5 Miles beyond *Hereford*.

#### CHERT, MARBLE, ALABASTER.

b.27. Chert, a sort of Flint, lying in and constituting a Stratum of several Yards thick. *Swaldale, Yorkshire*.

b.28. Chert, out of a Stratum half a Mile distant from the former.

b.29. A dusky red Granite. *Caldy Island, Wales*. There are several considerable Strata of this.

b.30. A grey, glittering Marble: 'Tis the common Lime-stone. *Pristine*.

b.31. Black Marble. From *Caldy-Island, Wales*.

b.32. A soft Stone, speckled, with a faint red and white: It seems to be an Alabaster; got in Quantity, near *Whitehaven, Cumberland*.

## PEBLES, FLINTS, AGATES.

b. 33. A white Sparry Pebble. Found in *Lime-Road*, betwixt *Bishop-Cliff* and *Newton*.

b. 34. A brown Sparry Pebble. Found near the former.

b. 35. An Agate, of a very observable Constitution. Found near *Beer* in *Devonshire*.

b. 36. A stony Mass, variegated with a dark brown, and a glossy talky white. Shores near *Minehead*, *Somersetshire*. *Conf.*

b. 55. b. 56. *infra*.

b. 37. A small Flint. Found near *Petworth* in *Sussex*. 'Tis finely lineated, and wrought on the Surface; after the Manner of the *Callimus* of some *Ætita*.

b. 38. A Mass, thick set with small Pebbles. Found in the Rubble of the Lead-Mine of my Lady *Cambell*, near *Eltrophene*, *Wales*.

b. 39. Small Nodules, cemented together by a brown stony Matter. Found betwixt *Huntley* and *Norleach*, *Gloucestershire*. There are vast Numbers of them along the Road for several Miles together. These, when smaller, are called *Pisolithi* by Writers.

b. 40. A cancellated Pebble. I observ'd in the Holes of this several small *Bivalves* living. Found on the Shores of *St.-----* a small Island near *Caldy*, *Wales*.

b. 41. Another, perforated by *Pholades*; some small, others pretty large. Found with the Precedent.

## TALCS.

*Talcs striated.*

b. 42. *Gypsum striatum album*. This with the two following lay in the perpendicular Fissures of the Strata of brown Stone; the Fibres running horizontally directly cross the Fissures. *Watchet*, *Somersetshire*.

b. 43. Another. From the same Place.

b. 44. Another. From the same Place.

b. 45. Spar; out of a Fissure in a Cliff near the *Lizard*, *Cornwall*.

b. 46. A Piece of Stone, from the upper Part of a Stratum of shivery Stone. That Stratum lay horizontally; and this Mass, which was of considerable Extent, lay flat upon it. 'Tis composed of Fibres parallel, and transverse to the Plane of the Body: It seems to be of a talky Constitution, and form'd in the horizontal Interval, since the Stratum. From a Cliff of the Sea, about a Mile West of *Lime* in *Devonshire*.

b. 47. A talky Spar, out of a Fissure in a Cliff near the *Lizard*, *Cornwall*.

*Tales not striated.*

b.48. A friable Substance, grey with a Cast of green; seeming to be Talc. From a String, or small Vein. In *Cleggo Cliff*, near *St. Agnes, Cornwall*.

b.49. A Talky Earth, very fine grey, with a Cast of Green. Found in the Road near *Gwendroth*, not far from the *Lizard Point, Cornwall*.

b.50. A Talc, near as fine as the *Venetian*, but of a reddish Cast; out of a Vein in a Cliff about two Miles North of the *Lizard Point, Cornwall*. A Quarter of a Mile from, N<sup>o</sup> i.

13.

b.51. The same sort, but harder. *Ibidem*.

b.52. A Sample of the Soap-Rock, which lies in the Sea-Cliffs about a Mile South-West from the *Lizard Point*. The Red is soft as Clay; as a great Part of this Matter is. 'Tis all found in Loads, or Veins of a Cherty Stone.

b.53. Gypsum, red, not striated. *Watchet*. Found about a Mile from the following. N<sup>o</sup> b.54.

b.54. Gypsum, white, not striated. *Watchet*. Found about a Mile from b. 42. *supra*, in an Hollow of a Stratum.

b.55. A Talky Mass, of a pale or yellow brown, very glossy and shining. From the Shores near *Minehead, Somersetshire*. *Conf. b.36. supra*.

b.56. Another, of a deeper brown. Shores near *Minehead*.

b.57. Part of a Mass that had been worn and rounded upon the Shores. 'Tis a white Spar, thick-set with Spangles of a white silvery Talc. *Pyrton-Passage, Severn*.

b.58. A Mass of Stone, grey, talky, worn. Found on the Shores near the *Lizard-Point, Cornwall*.

b.59. A Mica, greenish. Shores near *Tenby, Wales*.

b.60. A Sample of a Rock, black, with Micæ in it. About 2 Miles North of the *Lizard-Point, Cornwall*.

b.61. Micæ, silvery and black. Found upon the Sea-Shores about a Mile West of *Lime, in Devonshire*.

b.62. *Mica nigra*. From the Banks of the River *Derwent*, near *Cockermouth Castle, Cumberland*.

## LUDUS HELMONTIJ.

b.63. *Ludus Helmontij*. *Pyrton-Passage*. These Bodies were found in great numbers, here, upon the Shores of the *Severn*.

b.64. *Ludus Helmoatij*, found, tho' not very plentifully, by the cross Lanes near *Spinythorne* in *Yorkshire*.

b.65. *Ludus Helmontij*, broke off a Nodule twice the Bigness of a Man's Fist; near *Grinton* in *Swaledale, Yorkshire*.

b.66. *Ludus Helmontij*, found in the Street of *Spinythorne, Yorkshire*.

b.67.



*b. 67.* A Piece of a Stratum, divided into Partitions, after the manner of the *Ludus Helmontij*. There are several like Strata, lying all near horizontally, and being of all Thicknesses, from  $\frac{1}{4}$  of an Inch to a Foot, in the Cliffs of the Sea, about two Miles from *Tenby, Wales*. I traced them in the Fronts of the Cliffs for about half a Mile on end, and observed the same Stratum ever of the same Thicknes in all Parts. They were distanced by Strata of Shiver, of which chiefly the Cliffs consist. Underneath there appear several Strata of Coal; and indeed some interposed betwixt the Strata of *Ludus Helmontij*. It seems to hold Iron.

*b. 68.* *Ludus Helmontij*, seeming to hold Iron. It lies in Nodules to the Bigness of an Horse's Head, in Strata of grey Stone, in the Cliffs of the Ostium of the River, about three Miles from *Tenby*. There are vast Numbers of them.

*b. 69. b. 70.* A Talus, with part of a Stratum having Partitions or Septa after the manner of the *Ludus Helmontij*; from *Tenby*. The Length of it is the Thicknes of the Stratum, which is composed intirely of such Tali, of this Size, and bigger, to about one Inch in Diameter. There are various other Strata, parted, in like manner, by Cracks, into Tali. Some of the Strata are thicker, to a Foot or a little more in Thicknes. And in these, the Tali are larger, to about ten Inches, or a Foot, in Diameter. In these larger some of the Cracks are fill'd with white Spar. They were exposed on a Cliff of the River ----- within a Mile of the Sea; and appear'd naked, with Strata, sometimes of black Shiver, and sometimes of Coal, interposed. The Strata were near horizontal, parallel; and each Stratum of equal Thicknes in all parts.

*b. 71.* A Talus, invested with a ferruginous Crust, after the manner of *Ludus Helmontij*; being part of a Stratum, near three Inches thick, in the Brow of a deep hollow way, amidst Shiver, not far from *Brough*, upon *Stanmore*, in *Westmorland*. The whole Stratum is of this sort and thicknes. I had opportunity of observing it for twenty or thirty Yards on end.

#### BEZOAR MINERALE, and GEODES.

*b. 72.* *Bezoar Minerale*, holding Iron. I suppose, some of them are invested with eight or ten Crusts, but they shiver and fall off when exposed to the Air, as these were. Cliffs near *Tenby*. [This seems rather to be a Talus of some *Ludus Helmontij*.]

*b. 73.* Four small Nodules. There were others in vast numbers, of which I broke many, and found all, like these, with *Marcasité* in the Center. They seem to hold Iron: and were found in the Beds of Shiver, mention'd in the Account of *b. 69*, and *70. supra*. *Tenby, Wales*.

*b. 74.* A *Geodes*, being a coarse brown Nodule, and having a Black Poudre, like that of Coal, and small crystalliz'd Bodies in its Center. These, if not Diamonds, are so hard, that they cut Glasse. Found in Shiver, in a Lime-stone Quarry, near *Fresteyn*, in *Wales*.



*b. 75. Bezoar Minerale*, seeming to hold Iron. There were some, found together with this, invested with eight or ten Crusts; but they shiver, and fall off, when exposed to the Air; as this was. In the Cliffs near *Tenby*.

*b. 76.* Part of a *Geodes*, round, tending towards a globose Figure; and so large, that it held a Bushel and an half of Sand. It lay in a Bed of like Sand, ten Foot deep, about a Mile West from *Petworth*, in *Suffex*. It lay in the side of the Bank of a hollow Road, where were many others of various sizes, from one to three foot in Diameter. The Coats of all of them are very thin. The thickest I broke did hardly exceed half an Inch.

*b. 77.* The Crust of a *Geodes*, found upon the Moors call'd the *Hind-Head*, about five Miles from *Godalmin*, in *Portsmouth Road*. There were great numbers of them; of all sizes, from the bigness of a Walnut to such a size that they would contain ten Gallons. They were generally round, but of very different shapes. I saw none that had more than one Crust; nor did any of the Crusts much exceed half an Inch in thickness. All that I broke were full of a yellowish Sand, and lay in a Stratum of Sand of like Colour and Constitution.

*b. 78.* A Body consisting of several white transparent Sands, or very small Pebbles, contain'd in Cases, or Crusts, of a ferruginous or ochreous Substance. Taken up in the Quarry in *Petworth-Garden*, *Suffex*.

*b. 79.* A Piece of the Crust of the *Geodes*, found in great numbers in the Ochre-Pit, on *Shotover-Hill*, *Oxfordshire*.

#### SELENITES.

*b. 80. Selenita*, found in a Stratum of blue Clay about eight Foot thick, above the Free-stone Quarries, at the Foot of *Shotover-Hill*.

*b. 81.* Small *Selenita* lying in Oyster-shells. Out of the same Bed of Clay, *Shotover-Hill*.

*b. 82. Selenites*, very transparent, found on the Shores, on the East-side of a Creek, about a Mile above *Weymouth-Bridge*.

#### BELEMNITES.

*b. 83. A Belemnites*, seam'd, striated, and with jointed Bodies in the conick Cavity; out of the Cliffs near the River's Mouth, by *Bridport*, *Dorsetshire*. There were others that had the Joints fairer. They are found there in great numbers.

*b. 84.* Another, from the same Place.

*b. 85.* Another, from the same Place.

#### CORALLOIDEA.

*b. 86. Lithostrotion.* Some of the Samples have had the Columns crack'd since they were form'd; and the Cracks fill'd up with white Spar. The *Lithostrotion* is all found on the Tops of the Rocky-Cliffs about two Miles from *Tenby*, towards *Milford*. 'Tis found

found in Masses of different sizes, immers'd in a grey Stone. It lies in several Postures; but chiefly erect, or a little inclining, but never horizontal. 'Twas probably white at first; and since gradually tintured with parts of the Stone in which it lies.

b. 87. *Lithostrotion*. *Ibidem*. b. 88. *Lithostrotion*. *Ibidem*.

b. 89. *Lithostrotion*. *Ibidem*. The Columns of this are near round, or cylindric. There were, in the same Mass, some, that were flat and compress'd; but they are broke off: as are also several angular Columns. *Ibidem*

b. 90. *Lithostrotion*, a single Column with five sides. *Ibidem*.

b. 91. *Lithostrotion*, a single Column with seven sides. *Ibidem*.

b. 92. *Lithostrotion*, single Columns, with each six sides, but unequal. *Ibidem*.

b. 93. *Lithostrotion*. A Phalanx single of three Columns in a Row. *Ibidem*.

b. 94. ——— A Phalanx also single of four Columns, of a flattened Figure. *Ibidem*.

b. 95. ——— Two Phalanges. *Ibidem*.

b. 96. ——— Two Phalanges, crack'd since they were form'd, and the Cracks fill'd up with a coarse brown sparry Matter. *Ibidem*.

b. 97. ——— Two Phalanges, crack'd; and the Cracks fill'd with white Spar. This was broke off the biggest Piece, of which the Columns were thirteen Inches in length. As to the Diameter of the Columns, the largest I saw was not half an Inch in Diameter, and the least, near a quarter of an Inch; they being generally pretty nearly of the same thickness. Indeed, the sides being unequal, the same Column is frequently of a greater Diameter, measured one way, than another. And for the number of the Columns, there were in this Collection several Masses, about a Foot thick; I mean, measur'd cross-ways of the Faces of the Columns. *Ibidem*.

b. 98. ——— A Mass, crack'd; and the Cracks also fill'd with white Spar. *Ibidem*.

b. 99. ——— Another, with a Crack, fill'd with white Spar. The Columns of this are inflected or bent; of which I observed several other Instances. *Ibidem*.

b. 100. ——— A Mass, shewing the Junctures of the Columns. *Ibidem*.

b. 101. ——— A Mass, with an Entrochus immersed in one of the Columns. *Ibidem*.

b. 102. ——— A Mass, having affixed to one end of the Column a Mass of common Stone, of a dark grey Colour, with Entrochi in it, and an Impression of a small Bivalve. *Ibidem*.

b. 103. *Lithostrotion*. A Mass cut and polish'd. 'Tis about the Hardness of the white Genoa Marble. *Ibidem*.

b. 104. *Lithostrotion*. *Ibidem*. b. 105. *Lithostrotion*. *Ibidem*.

b. 106. *Lithostrotion*. *Ibidem*. b. 107. *Lithostrotion*. *Ibidem*.

b. 108. A very soft sandy Stone, of a greenish Colour, having in it several cylindric Bodies, white, and of a like sandy Constitution, about

about the eighth of an Inch in Diameter. These must have been form'd before the main Mass, wherein they are contain'd. There are, in this Mass, also dispersedly, several white Sands, of the like sort. A great part of the Stone of this Quarry is much harder; and made use of in building *Petworth-House*. The Quarry is in *Petworth-Garden*.

b. 109. Another Mass, in which the Bodies are branch'd; of which sort I saw some other Instances. *Ibidem*.

b. 110. A Mycetites. *Chedder-Cliffs, Mendip*.

b. 111. A Body, nearly resembling the coralloid Mushroom of the Red-Sea; immers'd, together with numerous small Sea-shells, in a grey Stone. Found in a Quarry near *Charterhouse, Mendip, Somersetshire*.

b. 112. A coralloid Body, excepting the Colour which is grey, resembling the *Tubularia Purpurea* of *Ferrante Imperato*. Found in the Rubble of a Lead-Mine near the former, *Mendip*.

b. 113. An Entrochus, conic Mycetites, and part of a coralloid Sea-Fan; in a brown Stone; out of a Quarry near *Charterhouse, Mendip*. Tho' the Sea-Fan be no where found in any of our Seas, yet I have observed Pieces of it in Stone in several Parts of England. 'Tis found in the Seas about *Jamaica*, and *Barbadoes*.

b. 114. Part of a coralloid Body, out of one of Mr. *Marriot's* Lead-Mines, at the *How* near *Grinton*, in *Yorkshire*.

b. 115. A Mass, out of a Vein of the same Mine, consisting of an earthy Matter, Spar, and Lead. What is most remarkable, is, that there are in it several coralloid Bodies, very fair.

b. 116. Coralloids, in Stone, from *Caldy-Island, Wales*. This is ill graved, and ill named, *Alcyonium*, by Mr. *Lhwyd* in the *Philos. Transf.* N<sup>o</sup> 252. p. 187.

b. 117. Coralloids, in a blackish Stone. I caused a Piece of this to be ground, and polish'd; and 'tis somewhat harder than the white *Genoa Marble*. *Caldy-Island*.

b. 118. Coralloids, in like Stone. *Ibidem*. b. 119. *Ibidem*.

b. 120. *Ibidem*. b. 121. *Ibidem*.

b. 122. Coralloids, in a dusky grey Marble, polish'd. *Ibidem*.

b. 123. *Ibidem*. b. 124. *Ibidem*.

b. 125. Polish'd. *Ibidem*. b. 126. Polish'd. *Ibidem*.

b. 127. Polish'd. *Ibidem*. b. 128. Polish'd. *Ibidem*.

b. 129. Coralloids, in a red Stone, much harder than the white *Genoa Marble*. *Caldy-Island, Wales*.

b. 130. Worn and rounded by the Sea. 'Tis polish'd on one side; and proves as hard as black Marble, which is of double the Hardness of the white. *Caldy-Island*.

b. 131. Coralloids, in a dusky brown Stone. *Chedder-Cliffs, Somersetshire*.

b. 132. A coralloid Body, found near *Bride-Church*, three Miles from *Cockermouth*, in *Cumberland*.

b. 133. A Coralloid; found on the Shore near *Aylemouth, Northumberland*.

b. 134. A Mass of brown Stone, thick set with Coralloids; being cut on one side, and polished: it proves rather harder than the white *Genoa Marble*. Near *Bristol*.

b. 135. *Ibidem*.      b. 136. *Ibidem*.

b. 137. A Coralloid; found near *Preston, in Tinmouthshire, Northumberland*.

b. 138. A Coralloid; found near *Rorey*, betwixt *Cockermouth* and *Eggermond, in Cumberland*.

b. 139. A Coralloid; found near *Rorey*, about a quarter of a Mile from the former.

b. 140. A Coralloid Body, of that sort call'd the *Honey-Comb-Stone*; found in the Fields near *Heddington, Oxfordshire*.

b. 141. A Coralloid *Astroites*; found in the Road betwixt *Oxford* and *Eynsham*.

#### S P A R S.

b. 142. White shivery Spar; from a Vein about 20 Foot over. 'Twas nearly of the same Thickness in all Parts, for two hundred Foot in height. It stood near perpendicular, and was compos'd of several Ribs, in which the Spar was of various Colours. In a Cliff by *Muscleridge, near Tenby, Wales*.

b. 143. Glossy, brown, ponderous Spar. Out of a Fissure near *Lanelthy, Wales*.

b. 145. White, glossy Spar, with some Spots of green; found upon the Surface of the Earth near *Dolgadwin, in Montgomeryshire*. There are vast Quantities of this upon the Surface, both here, and indeed all the Country round. There are great numbers of Veins under Ground of like sort of Spar there. Those on the Surface seem to have been forced from these Veins by Water, as the Shoad-stones were.

b. 146. A Piece of white Spar; out of a Fissure near *Lanelthy, Wales*. I have seen white Pebbles, or Fragments, rounded, and worn, of the very same Constitution.

b. 147. Spar, white, with a Cast of green; out of Mr. *Marriot's* Lead-Mines at the *How, near Grinton, in Yorkshire*. There are, in all Parts of it, Veins, branched, consisting of Matter not so transparent as the rest of the Body. This is ponderous, and perhaps may hold some Lead.

b. 148. Another Sample, with Lead-Ore incorporated with it, from the same Vein.

b. 150. Spar, white, with a Blush of a dusky Purple, breaking into Rhomboid Squares. Taken out of a Fissure of a Stratum near *Newtown*. They are trying here for Lead. *Conf. b. 184. infra*.

b. 151. Spar, glossy, and talky, white, with a Cast of green. From *Redruth*, out of a Vein mix'd with Copper and Tin.

b. 152. A brown Spar; out of a Limestone-Quarry in *Carrmarthen Road*, about four Miles short of *Tenby*. It lay in a Fissure.

b. 153.



*b. 153.* Spar, red, and holding Iron, vein'd with white. Found in a Fissure of a Rock, over-against the Hot-Well, but on the other Side of the River, by *Bristol*.

*b. 154.* A white Sparry, or Coralline Incrustation, with *Corallina* growing upon it. Out of the Sea near *Low-Island*. 'Twas struck off a loose Stone: and several of the Stones thereabouts had Crusts and Precipitations of the like upon them.

*b. 155.* A grey sparry Incrustation, compos'd of several Cortices one upon another, broke off a Mass on the Floor; form'd by Water falling from the Roof above, in *Wookey-Hole*, near *Wells*, *Somersetshire*.

*b. 156.* A coarse marley Spar; from an incrusting Rill, on the Side of a Mountain, in *Oxford-Road*, five Miles short of *Gloucester*.

*b. 157.* Spar, form'd successively, Crust upon Crust, and made round by being beat about, and mov'd by Drops of Water falling from the Top of a Grotto, by an Iron-Work, near *Clourwall*, in the *Forest of Dean*, *Gloucestershire*. These two Samples were found among several others immers'd; and, as it were, frozen in a sparry Crust of the Floor, form'd by Spar precipitated out of the falling Water, after they were too ponderous to be mov'd any longer. This affords us plain proof of the Growth of Spar at this day. Other Proofs there are, in great abundance in the *Stalactita* hanging from the Roofs, and the sparry Incrustations on the Sides of the Mines wrought anciently, and deserted after the Ore was got out.

*b. 158.* Spar, in Squares, fallen off from a Body of shattery Spar, in an Iron-Work near *Clourwall*: agitated, and somewhat tattered and worn by the Water, dropping from the Roof above, and beating them about. The same Water bringing sparry Particles along with it, incrusts and incloses some of them, that lie where the Force of the Water is least. Those, *b. 157.* are Instances of these Bodies so incrusted. Confer. *b. 197. infra*.

*b. 159.* White Spar, crusted upon Coal, very fine, with *Stalactita* falling from it. From *Tenty-Cliffs*, *Wales*.

*b. 160.* A red sparry Plate; found with the *Stalactita*, *b. 161. infra*.

*b. 161.* A *Stalactites*; out of an Iron-Mine, in the *Forest of Dean*. Such are commonly found in Grotto's and Fissures in the Mines, and the Tops of old deserted Works about *Clourwall*. I observ'd great Numbers of these there; and most of them fistulous, or hollow.

*b. 162. Ibidem. b. 163. Ibidem. b. 164. Ibidem.*

*b. 165. Ibidem.*

*b. 166.* Light, fistulous, white, friable, sparry *Stalactita*. Found hanging down from the Arches of a Stone-Bridge, over a River betwixt *Estrophene* and *Caermarthen*. There are vast Numbers of them there, of all Sizes, to a Foot in Length. This gives undeniable Evidence of the present Growth of Spar.



b. 167. Sparry Concretions, on a blue slatey Stone; out of Mr. Waller's Slate-Quarries at *Ynysfihre, Wales*.

b. 168. Spar; from a Fissure of one of the Quarries in *Portland*.

b. 169. Spar, tuberos, and cavernous. From one of the Quarries in *Portland*.

b. 170. Spar, in Shoots or Columns; found in an horizontal Interval, betwixt two Strata, in an erect Posture, about 10 Foot deep, in a Lead-Mine near *Charterhouse*. The Strata seem'd to have been dislocated, borne from their original Site, and distanc'd by some external Power: To which they were the more obnoxious, by reason of two perpendicular Fissures that run near parallel to each other, at about 15 Foot distance. There are Sparks of blue Lead-Ore, incorporated with the sparry Columns; and the Miners say they found a pretty deal of the same Kind of blue Ore in that Interval, which is the only Case in which Lead is found lying horizontally. And this is very uncommon. I never saw but this Instance of it, and one in *Arkendale*. This Interval was about half a Foot in Diameter, and the other in *Arkendale* about two Inches. Tho' the Lead in these was not originally formed in the Manner of a Stratum: but run after the Dislocation of the Strata, into the Intervals, as that in the perpendicular Fissures did. The Spar being thus form'd, in these Intervals, into Columns, gives me a Suspicion, that the Columnar Coralloid Bodies in *Cumberland*, in the *English Catalogue*, Part the First, Page 282. e. 17 & 18. were form'd by the same Means; they standing parallel, erect, and in the horizontal Intervals of the Strata of Stone. I have observ'd, in some Stone-pits near *Oxford*, the Honey-Comb-Stone, with the Hollows erect, lying in the horizontal Intervals of the Stone. Confer. b. 157. *infra*.

b. 171. More like sparry Columns. From the same Interval.

b. 172. More likewise. From the same Interval.

b. 173. White Spar; out of a Vein of Lead-Ore, in the *Charterhouse* Liberty, *Mendip, Somersetshire*.

b. 174. A crystalliz'd Spar; out of a Vein of *Manganese*. In Mr. *Ingram's* Mine at *Bruntyl*, near *Llanedloes*, in *Montgomeryshire*.

b. 175. Spar, adhering to Stone, with Shoots of White-Lead-Ore crystalliz'd on its Surface. From Mr. *Harley's* Mine, in *Eskegalid, North-Wales*.

b. 176. Spar, with white Lead-Ore. From *Barrow-Work*, the Duke of *Somerset's* Mine in *Cumberland*. It lies in a Vein amongst blue Lead-Ore.

b. 177. Tin-Grains, Tin-Ore, and *Cornish* Diamonds, being Part of a Vein, and adhering to a Piece of the Stone of the Side; from *Wallwork, Cornwall*.

b. 178. Spar, with *Cornish* Diamonds; from the side of a Cavity, in a Squat, at *Hewas-Work*, not far from *Polgouth*, in *St. Stephen's* Liberty, *Cornwall*.

*b. 179.* Spar, with *Cornish* Diamonds; out of a Squat near the precedent.

*b. 180.* Spar, with *Cornish* Diamonds; from a Cavity in a Tin-Vein, in *St. Stephen's Liberty, Cornwall*.

*b. 181.* A friable Mineral, grey, with a Cast of green and yellow, seeming to consist of Spar, and Sulphur. 'Tis plated, and cavernous; very halituous, and stinking. From a Tin-Vein, in *St. Stephen's Liberty, Cornwall*.

*b. 182.* A like Mineral, shot into small crystalline Columns. From a Vein of a Mine near the precedent.

*b. 183.* Another; from a neighbouring Vein.

*b. 184.* Spar, white, part of it crystalliz'd. Taken near *b. 150. supra*, out of a Fissure of a Stratum near *Newtown*.

*b. 185.* White Spar, shot upon a dark grey Stone, into triangular Crystals. *Pyrton-Passage*. Broke out of a Stratum of Stone at the bottom of the Cliff.

*b. 186.* A radiated Spar. I have an Ore of Antimony radiated like it. Out of a Rock in *Caldy Island*.

*b. 187.* Spar, clear, and crystalline, with a talky Gloss. 'Tis shot into Rhomboid Figures, which are placed in Rows. Found in a Vein among Iron-Ore, near *Clourwall, Forest of Dean, Gloucestershire*.

*b. 188.* A talky Spar, of a Rhomboid Figure; out of a perpendicular Fissure, in one of the great Quarries in *Portland-Island*.

*b. 189. Ibidem.*

*b. 190.* Hexagonal Shoots of Spar; from a Fissure of a Rock near *Royadner, in Radnorshire*.

*b. 191.* Spar, white and red, crystalliz'd. Found in a Rock near the Lead-Ore, *Nº 1. 36. infra*, in a Mine near *Estrophene, Wales*.

*b. 192.* Spar, internally white, and red on the Surface; shot into large hexangular Pyramids. Found in a Rock in *Caldy-Island*, on the Side towards *Tenby, Wales*.

*b. 193. Ibidem.*      *b. 194. Ibidem.*

*b. 195.* Spar, crystalliz'd; from a Cavity in a Tin-Vein, in *St. Stephen's Liberty, Cornwall*.

*b. 196.* A Shoot of an hexagonal Crystal; out of a Vein of the Iron-Ore, in *Hartry Liberty, Mendip*. The Constitution of it is remarkable, it appearing to be composed of several hexagonal Cases, one within another: and by that means shewing the Method and Order in which the crystalline Matter succeeded in the Formation of this Body.

*b. 197.* *Flores Martis*; found, cover'd with stagnant Water, in an Iron-Mine near *Clourwall*. There is of it, in Sprigs, near two Inches long, growing upright, on the Floor of the Grotto mention'd *b. 157, & b. 158. supra*: and form'd there by Spar brought with the Water falling from the Top of the Grotto.

*b. 198* Out of a Fissure of the same Work.

b. 199. Five small Crystals. Out of the Cracks of the Pin-Ore, n. 52, 53, to 68. *infra*, betwixt *Lanelthy* and *Pontipool*, *Wales*. Mr. *Lewis*, the Master of those Iron-Mines, has of them that are very fine. See the Manner how they grow in.

b. 200. Spar, crystalliz'd, with Grains of sulphurous Copper; out of a Copper-Vein. *Wheal-Gilbert*, *Cornwall*.

b. 201. Spar, in hexagonal Shoots, along with Masses of *Blende*, and small Efflorescencies of the same. Under each of these is a Pore in the Spar. There are vast Masses of it in the Lead-Veins of the Mines of *Eskergallid*, Mr. *Harley's* Mine in *North-Wales*.

b. 202. *Ibidem*:      b. 203. *Ibidem*.      b. 204. *Ibidem*.

b. 205. *Ibidem*.      b. 206. *Ibidem*.

#### S A L T S.

c. 1. Nitre-Earth. From a Place call'd *Pidgeon-Hill*, from the Resort of Pidgeons thither to pick the Nitre. 'Tis about a Mile from *Llangothley*, in *Wales*, and fifteen Miles beyond *Shrewsbury*. 'Twas given me by Mr. *Casbrook* of *Bristol*, who is Proprietor of the Soil where it is found.

c. 2. From the same Place.

c. 3. This has been wash'd; but was found with the former.

c. 4. A yellow Substance, saline, mix'd, but chiefly vitriolick; found pretty plentifully on the Cliffs beyond *Limington*.

c. 5. Another, of a deeper yellow, saline; from the same Cliffs,

c. 6. Another, paler, saline; also from the same Cliffs.

#### BITUMINOUS BODIES.

d. 1. Canal-Coal. *Bolton*, in *Cumberland*.

d. 2. Another sort of Canal-Coal; from the same Pit. The lower Part of the same Stratum is of common Coal.

d. 3. A slaty Stone, very light, of a dark grey Colour; broke out of a Stratum of about a Foot in thickness. They call it *Coal-stone*. It flames easily, and burns freely; but holds and endures the Fire much longer than Coal. They use it for heating of Ovens. *Portland-Island*. There is a *Cornu Ammonis*, and various other Shells in it.

#### SULPHURS.

e. 1. Sulphur-Ore. *Redruth*, *Cornwall*.

#### PYRITE.

e. 2. A Piece of Slate; from Mr. *Hicks's* Slate-Quarry at *Mul-lineck*, with Grains of *Marcasite* in it, *Cornwall*.

e. 3. *Pyrite*; found in great Numbers near *Cockermouth*, *Cumberland*. See e. 5. *infra*.

#### MARCASITE.

e. 4. A Piece of *Mundick*, crystalliz'd; out of a Tin-Vein, *Godolphin-Ball*, *Cornwall*.

e. 5. A *Pyrites*, crystalliz'd, and shot into cubick Figures. Out of the Cliffs near the River's Mouth by *Brid-Port, Dorsetshire*. There are great Numbers of *Pyrites*, of this, and other Kinds, beat out of these Cliffs by the Sea, and cast on the Shores there.

e. 6. A *Marcasite*; from *Gamp, Cornwall*.

e. 7. A *Marcasite*; from a Tin-Load, in another Work, in *St. Stephen's Liberty*. The *Cornish* Miners call all *Marcasite*, whether they be red, silvery, or yellow *Mundick*.

e. 8. *Marcasite*. *Estemtean, Wales*. There is incorporated with it a little Lead-Ore. There is a vast Quantity of this *Marcasite*, in the Vein with the Lead-Ore. *Vid. e. 26. infra*.

e. 9. A cavernous *Marcasite*, of that sort that *Monfieur Schonberg*, and the *Saxon* Mineralists, call *Mater Metallorum*. [See the *Catalogue of the foreign Fossils*, N<sup>o</sup> 4. o. 18.] From *St. Stephen's Liberty*, in *Cornwall*.

e. 10. *Marcasite*, with a little *Blende*, and *Spar*. 'Tis florid, grumous, and much like that which the *Germans* call *Mater Metallorum*. From *St. Stephen's Liberty, Cornwall*.

e. 11. A vitriolick *Mundick*. *Key-Parish, Cornwall*.

e. 12. *Shoad-Stones* \*, of several sizes; from *St. Agnes-Ball*. These, and those N<sup>o</sup> m. 1. and m. 41. were all taken fresh out of the *Shoads*; and yet, by the Smoothness of their Surfaces, they appear to have been worn by Water, which must have been before they were lodg'd there.

e. 13. White *Mundick*. *Relistion, Cornwall*. 'Tis of so great Gravity, that there must be something extraordinary in it.

e. 14. White *Mundick*. *Karnbrey-Parish, Cornwall*.

e. 15. White *Mundick*. *Relistion*. This is a very poisonous Mineral, and doubtless holds *Arsenick*.

e. 16. *Mundick*. *Baldice, in Key-Parish, Cornwall*.

e. 17. Out of a Vein, or Load of Copper-Ore, in *Guallen-Parish, Cornwall*. It looks like *Bismuth*.

e. 18. White *Mundick*, very rare; from a Vein in *Cleggo-Cliffs*, by *St. Agnes, Cornwall*. It probably holds *Arsenick*.

e. 19. Yellow *Mundick*, with *Mock-Lead*. *Guinop, near Poldice, Cornwall*.

e. 20. *Mundick*, out of a Tin-Vein. *Godolphin-Ball, Cornwall*.

e. 21. A *Marcasite*, that runs to a *Regulus*, that no Method is found yet to reduce to a Metal. From *Mr. Raw's Works*, near *Marzion, or Market-few, Cornwall*.

e. 22. *Mundick*. Thrown up from a Work near *Fatwork, Cornwall*. There are a few *Cornish* Diamonds in it.

e. 23. *Marcasite*, and *Spar*; out of a Tin-Vein. From *Poldice, Cornwall*.

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\* These, abounding in Vitriol, this has shot, and the Bodies are fallen to pieces. These may be seen in his Letters. The Descriptions of the Bodies in this Catalogue, are generally drawn by myself.



e. 24. Mundick, with Spar, out of a Tin-Vein. *Godolphin-Ball*.

e. 26. Marcasite. *Eslemtean*. There's Lead-Ore with it; and there is a vast Quantity of it in the Vein with the Lead. *Vid. e. 8. supra*.

e. 27. Mundick, with Iron-Ore. *Gwendron*, near *Helfton*, *Cornwall*.

e. 28. Mock-Lead and Mundick. *Gweldron*, near *Helfton*, *Cornwall*.

#### CALAMIN.

f. 1. *Calamin*, cellular, cavernous, and very much resembling the interior Constitution of Bones. The Workmen reckon that the best, which nearest approaches dried Bones both in Texture, and Colour, *viz.* a pale brown. From *Shipham-Liberty*, *Mendip*, *Somersetshire*. There are several Mines of this Mineral thereabouts. It lies in Masses in the perpendicular Fissures, from near the Day to ten Fathom deep, among Clay, coarse Spar, and Riders of Stone\*. This Mineral appears very much like the Samples of some of the Lead-Veins, in *Arkendale*; and the North of *England*: and at *Shipham* the *Calamin* has frequently Sparks of Lead concreted with it. Nay, they have sometimes found here a considerable Quantity of Lead at the bottom of some of their *Calamin* Veins; and probably would find it in the rest, did they expect it, mine, and search in pursuit of it. There is found frequently a great Quantity of common Spar, in the Veins along with the *Calamin*; in some, in form of *Riders*, in others in form of *Ribs*.

f. 2, 3, 4. *Calamin*, three Samples of the best sort, from the same Mine, with Lead concreted with it. In the Preparation of this Mineral, the Lead-Ore calcines along with it. Lead no ways incommodes the Workers of Brass; so far from it, that it mixes and incorporates very kindly with Copper: and the Workers ever use some Lead in the making of Copper.

f. 5. *Calamin*, with Lead, from another Mine, in this Liberty.

f. 6. Another Sample, from a different Mine there.

f. 7. Another, from a still different.

f. 8. Another, with Lead-Ore, and white Spar incorporated with it, from the same Mine with f. 7.

f. 9. Another, from a yet different Mine.

f. 10. Another, from a still different Mine. This has a pretty deal of Ochre with it; as also of Lead-Ore.

f. 11. A Mineral of a red Colour; out of one of these *Calamin* Mines: and probably holding some very small proportion of *Calamin*.

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\* This Piece is of the better sort; the Miners reckon it the very best. The greenish grey is the native Colour of the *Calamin*. The red and brown are adventitious; and owing to the Soil, or Ochre of the Vein.



f. 12. A Mass composed partly of Blend, and partly of Calamin; vein'd, or rather cruſted, alternately, in a very beautiful manner.

# ANTIMONY, and SULPHUR.

g. 1. *Antimony*, from *St. Cue, Cornwall*. The Mine is now not wrought.

g. 2. Another Sample, from the ſame Mine.

g. 3. A Maſs of Antimony with native Sulphur, and Spar, as alſo an hexagonal Column of white Spar. From the ſame Mine.

g. 4. Another Maſs. *Ibidem*.

g. 5. An hexagonal Column of Spar, white, with a Caſt of purple. *Ibidem*.

g. 6. Another Maſs of Antimony. *Ibidem*.

g. 7. Another Maſs, with native Sulphur, and white Spar. *Ibidem*.

g. 8. Another. *Ibidem*.

g. 9. Native Sulphur, with white Spar and a few Sparks of Antimony. Out of an Antimony-Vein. *Ibidem*.

g. 10. Part of a Shoad, of ſeveral hundred Weight; conſiſting chiefly of white Spar, with a little Antimony. It lay within a Foot or two of the Day amongſt many Fragments, within three or four Foot of the Vein. From *Endellion-Parish, Cornwall*.

g. 11. Antimony, out of a Vein. *Endellion*.

g. 12. Antimony, out of a Vein, at *Endellion*. Theſe Mines are work'd only for Antimony; of which many Tons have been raiſed here. It lies only in Fiſſures or Veins, that are irregular, both as to their Capacity, and Tendency; from the very Surface of the Rock, which is within four or five Foot of the Day, to ten or twelve Fathom deep. The yellow Matter that 'tis cover'd with, is Sulphur. 'Twas more unctuous; and burns freely with a blue Flame, at the Mines. This Coat is additional; the Vein of Antimony having crack'd and parted, ſo that the Parts fit and tally one to another; and the Sulphur introduced ſince by Water, paſſing, hath fill'd up the Cracks, coated and cover'd over the Tali, or Parted-Maſſes, of Antimony. *Confer. l. 60. infra*.

g. 13. Antimony, out of a Vein. *Endellion*.

g. 14. Antimony, from a Vein. *Endellion*.

g. 14<sup>x</sup>. Out of the ſame Vein.

g. 15. Antimony in white Spar. Out of another Mine in the ſame Tract.

g. 16. Antimony with white Spar, part cryſtalliz'd. I ſaw of the *Cornish* Diamonds above an Inch long in this Vein. *Ibidem*.

g. 17. Native Sulphur, out of an Antimony-Vein. *Endellion*.

g. 18. Another Sample of native Sulphur. Out of the ſame Vein.

g. 19. Antimony. *Endellion*. It ſeems both by the Weight, and by the Hue, and Complexion of the Maſs, to contain likewiſe Lead.

## MANGANESE.

*b. 1.* A Mass, white, semidiaphanous, glossy, and very ponderous; doubtless holding Lead. On one side is a Crust of Manganese; on the other a yellow Accretion, appearing to be Sulphur. Found but pretty rarely, in a Vein of Manganese in *Hartry-Liberty, Mendip, Somersetshire*.

*b. 2, 3, 4, 5.* Other Varieties of the same. The Manganese upon some of them is crystalliz'd. *Ibidem*.

*b. 6.* A Mass of the same, whiter and less transparent; cover'd over with a Crust of Manganese. *Ibidem*.

*b. 7.* Another, with the Surface thick set with small Caverns. *Ibidem*.

*b. 8, 9.* Two Samples, from another of these Manganese-Mines. They appear like Tale; but are very ponderous, and doubtless hold Lead.

*b. 10, 11.* Two others, striated, and fibrous, crusted about with Manganese. *Ibidem*. The Manganese is composed of various parallel Crusts; as is that N<sup>o</sup> 16. *infra*.

*b. 12.* Another, composed partly of white Lead-Ore, and partly of Manganese; both shot very curiously into small Crystals.

*b. 13.* Manganese, black with a Cast of grey, or rather of blue; which the Miners reckon the richest and finest; out of a perpendicular Fissure or Vein. *Hartry-Liberty, Mendip*. The Veins were of all Dimensions to about three Foot in width. The Miners frequently come at the Manganese at the Depth of two or three Fathom, sometimes shallower; and prosecute it down to five or six. One I saw, that was wrought to twelve Fathom. Underneath they usually find hard Iron-Ore, and sometimes of the striated crusted Ore, call'd *Hæmatites*. Manganese is rarely found but in an Iron Vein; the upper part of which Vein it sometimes fills. In some places it is found quite up to the top of the Vein; nay, loose likewise sometimes among Rubble at the top of the Rock. And the Iron Miners of other Countries would term Manganese no other than the *Sample* of an Iron Vein. The Manganese lies in the Vein in Lumps wrack'd, in an irregular manner, among Clay, coarse Spar, and Chips of Stone. It has ordinarily the appearance of Iron Slags; and this, like some of these, and indeed to the common *Hæmatites*, is run into Tubera, or Bubbles on one side.

*b. 14.* A Sample, not much inferior; from another Mine in that Neighbourhood.

*b. 15.* Another, harder, and not so good; having Tubera on one Surface, and Crusts one within another, not unlike those of the *Hæmatites*. From another of these Mines.

*b. 16.* Another with a Cavern, on one part, having lodg'd in it a Mass of white Lead-Ore. *Ibidem*. Confer. N<sup>o</sup> 10, 11. *supra*.

*b. 17.* Another, with Masses, either of the same Ore, or Spar, lodg'd in it. From another of these Mines.

b. 18. A Mass of Manganese, enclosing in its Center a Mass of a blackish talky Spar. *Ibidem*.

### MOCK-ORES, and Samples of Veins.

i. 1. Blend, or Mock-Lead; with Potters Lead-Ore; cover'd with a Crust of crystalliz'd Spar. *Cumustwith*, one of the Company's Mines, in *Montgomeryshire*.

i. 2. Blend, out of a Lead-Mine, at *Estrophene*; which, I think, is in *Radnorshire, Wales*.

i. 3. A Marcasite, with Blend incorporated with it. From *Polmore-Cliff*, in Mr. *Scobel's* Estate, *Cornwall*.

i. 4. Another Marcasite, with Blend, and Spar, also in it. *Ibidem*.

i. 5. A metallic Body with some Efflorescencies of green Copper; the greatest part of it appearing somewhat like the Potters Lead-Ore: tho' it is not that, but probably Blend. Found in a Vein of the Sea-Cliff in *Cleggo, Cornwall*.

i. 6. A Sample of a Vein, from the same Cliffs.

i. 7. Mock-Lead, from Mr. *Tonquin's* Works at *Gamp*. 'Tis a Rib that fill'd a Vein, and has in it several cross Veins of Spar.

i. 8. Mock-Lead, or Blend, with an Accretion of white crystalliz'd Spar; from *Polliven*, near *Helfton, Cornwall*.

i. 9. Blend, with several Veins of white Spar in it. *Cumustwith* Lead-Vein, *Wales*.

i. 10. A blue Mass, very glossy and shining. In one part of the Vein of this there is Blend; in another Spar, crystalliz'd upon, and growing from each side of the Vein, and shooting towards the middle of the Vein. From *Cumustwith, Wales*.

i. 11. Mock-Lead. *Trevescas-Works, Cornwall*.

i. 12. A Marcasite, with Blend incorporated with it, as also some Spar. From *Polmore*, in Mr. *Scobel's* Estate.

i. 13. A Mass seeming to hold Metal, probably Iron; and referable to the *Hæmatites*: with *Mundic* in it, as also *Steatites*. Found in a Shoad in Mr. *Robinson's* Land, two or three Miles from the *Lizard Point, Cornwall*.

i. 14. A mineral Substance, of a dusky ferruginous Hue; having in it some green Efflorescencies of Copper and various Shoots, of a Mineral, of the Complexion of Antimony, in a stellar Form, very beautiful. Found with the three following, and the precedent, in Mr. *Robinson's* Land, among Fragments and Rubble, in a Shoad, above the Rock, or firm Strata. The Tanners say there is found of the very same Mineral, in the Strings or small Veins, of the said Rock underneath. *Confer. i. 52. infra*.

i. 15. *Ibidem*. i. 16. *Ibidem*. i. 17. *Ibidem*.

i. 18. A Mass of Blend, from a Shoad or Stream-Work at *Whole, Cornwall*. *Confer. m. 8. 12. 88. infra*.

i. 19. A metallic Body, part of a Load; found about three hundred Yards from the Tin-Work of *Trowa*, in *Breag-Parish, Cornwall*.

*wall.* There are in it Shoots of a native Metal, exactly of the Complexion of Brass. It emits no Fumes in the Fire.

i. 20. A Mineral, found in great Quantities in a Tin-Vein. From *Hard-head*, in *Cornwall*.

i. 21. Lead-Ore, with a little white Spar, in Blend, brown, glossy and shining like Talc. Out of a Mine near *Esirophene, Wales*. 'Tis judg'd to hold Copper.

i. 22. *Call*. It holds Iron. From *Peran-Well*, near *Penrin, Cornwall*.

i. 23. An Ore, seeming to be of Tin; but none has been yet got out of it. From a neighbouring Mine of Mr. *Ewstlick*, near *St. Just, Cornwall*.

i. 24. Part of a Vein, grey, and glossy; consisting of white Spar and Blend. It has been assay'd for Tin; but yields none. From a Work near *Roche, Cornwall*.

i. 25. A Mineral, very ponderous, and probably holding Tin. 'Tis full of what they call *Cockle*, which is a black, thready Mineral, seeming to be a fibrous Talc. 'Twas part of a Squat, at *Hewas-Work*, not far from *Polgouth*, in *St. Stephen's Liberty, Cornwall*.

i. 26. *Call*. From *Maudulin*, in *Peran-Well, Cornwall*.

i. 27. *Call*. *Trefuce-Wood*, near *Poldice, Cornwall*.

i. 28. A Sample of a Vein, holding Tin, Spar and talky Micæ; out of a Vein in that Stone which the Tinnerns call *Growan*. From a small Tin-Work, a Mile South-West of *St. Agnes, Cornwall*.

i. 29. A Mass, composed chiefly of Talc and Spar, from *Murvey-Cliffs, Cornwall*; found amongst Strings of *Mundick* and *Copper*.

i. 30. A Vein-Stone, consisting of a grey talky Spar. Out of a Tin-Load, in *St. Stephen's Liberty, Cornwall*.

i. 31. A Vein-Stone, from *Three-Burroughs*, in Mr. *Scobel's Estate*. It was tried for Tin, but yielded little or none.

i. 32. Part of a Vein, black, flakey, thready, and grumous. From a Load in *St. Stephen's Liberty, Cornwall*. It holds Sulphur, and stinks when wet. Part of the same Vein, moulder'd and liquated, when expos'd to the Weather. Underneath this was Tin-Ore.

i. 33. A talky Stone, of the same sort with that in which the Vein of Tin lies. From *Treviddo-Ball, Cornwall*.

i. 34. A mineral Mass, by means of Veins and Partitions, divided into various Cells. The Partitions are hard, and of a dusky brown, near a Rust-Colour. The Cells are fill'd with a friable, yellow Ochre. Digg'd up near the Road betwixt *Shipham* and *Charterhouse, Mendip*. They had rais'd a considerable Quantity of it; but, whether for the Ochre, or in expectation of Calamin in it, I cannot tell.

i. 35. A Mineral out of Mr. *Marriot's Lead-Mines* at the *How*, near *Grinton*, in *Yorkshire*.

i. 36. A Sample of a Vein, part of a Load, from a Cliff about half a mile North of the *Lizard-Point, Cornwall*.



i. 37. A white Stone, with Pores fill'd with a dusky grey Earth, part of a Mass, of about fifty Pounds Weight; found amongst some others on the Road, about two miles from *Radnor*, in the way to *Estraphene, Wales*.

i. 38. A Sample of a Vein, part of a Load, from a Cliff about half a mile North of the *Lizard-Point, Cornwall*.

i. 39. A sort of Rust-colour'd Stone, frequent in the Rocks by *Minehead*, vein'd with a yellowish, glossy, talky Spar. The stoney Masses, b. 36, 55, 56. *supra*, are Pieces out of the Fissures or Veins of the said Stone, forced off, and afterwards rounded by the Sea.

i. 40. Grey Stone with whitish Spots in it, very numerous, seeming to be Fragments of whitish Stone inclosed in it. From *St. Agnes-Ball, Cornwall*. The Miners there call this *Vein-stone*.

i. 41. Vein-stone, green and yellow; the latter very friable, and soft. From a Tin-Load, in *St. Stephen's Liberty, Cornwall*. There were found some small Pieces of Copper-Ore in the same Load.

i. 42, to 51. inclusive. Samples out of various Veins, all near *Redruth*. The Miners call them *Gossens*. They shew a Variety of mixed Matter; and amongst the rest, Spar, tinged blue and green, by Copper.

i. 43. *Ibidem.*      i. 44. *Ibidem.*      i. 45. *Ibidem.*

i. 46. *Ibidem.*      i. 47. *Ibidem.*      i. 48. *Ibidem.*

i. 49. *Ibidem.*      i. 50. *Ibidem.*      i. 51. *Ibidem.*

i. 52. This Mineral was found in Mr. Ball's Estate at *Minehead, Devonshire*, ten miles South of *Exeter*. This is of the same kind with that i. 14. *supra*.

#### COPPER-ORES.

k. 1. A Mass of Copper, native. from *Ross-Common*, (near *Trevellet*) in Mr. *John Estwick's Estate, Cornwall*. Such is very rarely found.

k. 2. Native Copper. From *Trevescas-Work, Cornwall*. This Mine was recover'd at a vast Expence, but very little Copper was got; Water bearing so hard upon them and finally drowning them out.

k. 3. *Ibidem.*      k. 4. *Ibidem.*      k. 5. *Ibidem.*

k. 6. Native Copper, with a white gritty Spar. From *Cornwall*. Sent by Mr. *Causler of Redbrook*.

k. 7. Out of the same Vein.      k. 8. Out of the same Vein.

k. 9. Native Copper in very thin Plates; out of the firm Load or Vein at *Trevellet*; with a Sample of the Matter of the Load in which 'twas found. Some of it grew also in the Cracks of the Rock at the sides of the Vein, at 12 or 15 Fathom deep.

k. 10. Grains and Flakes of Copper from another Part of the same Vein.

k. 11. Copper Ore, green, with Grains of native Copper in it. From *Zowan Coniggan, Cornwall*.

k. 12.



k. 12. Copper Ore, with a Vein of Spar; amongst which are various Masses of *Native Copper*. Out of a Vein (now not wrought) in *Trevellot Cliff*, near *St. Twist*, *Cornwall*.

k. 13. Another Sample, with much *Native Copper*. From the same Vein.

k. 14. Another, likewise, with *Native Copper*, incorporated with Iron-Ore. From still the same Vein.

k. 15. Another, adhering to a Piece of red Stone; being Part of the side of the same Vein. There is upon it a whitish Clay, of which there was a considerable Quantity in this Vein; and I observ'd small Masses of *Native Copper* frequently amongst it.

k. 16. Another, out of the same Vein. Attempting to break it, a Mass of Copper discover'd it self, so tough and flexil as not easily to be broke, or suffer the Pieces to part.

k. 17. Another, out of still the same Vein, with much *Native Copper* upon it. It seems also to hold Iron; and there are small Rhomboides upon it, as sometimes happens in Iron-Ore.

k. 18. Another, from the same Vein; with a Sprig of *Native Copper* upon it.

k. 19. Another, from the same Vein; with a like Sprig, and much Spar.

k. 20. Another, from the same Vein, with numerous Grains of *Native Copper* in it.

k. 21. Another, with *Native Copper*, growing in a Thread or small Vein, from still the same Vein.

k. 22. Another, from still the same Vein, with a considerable large Plate of *Native Copper*.

k. 22. † A Piece of grey Stone, having in it a Vein, fill'd partly with Copper-Ore, and partly with *Native Copper*. Found among the Wastes anciently digg'd out of the same Vein.

k. 23. Copper-Ore, of a Lead-Colour, much resembling what the Smelters call *White Copper*. This is the last Colour that Copper assumes in Fusion before it becomes red. This Ore is so very fine and free from stony Matter, that it will cut with a Knife. Out of a small Tin-Mine near the *Land's-End*, *Cornwall*.

k. 24. Another Sample of the same, with green Ore along with it. Found in a small Tin-work near the precedent. In several of the Tin-works in *Cornwall*, there is Copper-Ore of almost all sorts, as well as Mundick in the Tin Veins.

k. 25. Blue Copper-Ore. Found in small Quantities at ----- on *Aldson-Moor*. It may serve for a Blue for Painters.

k. 26. Copper-Ore, appearing to hold near half Copper. From *Feldum* near *Richmond*. 'Tis found in Quantity, and wrought by Mr. *John Warde*. 'Tis in Colonel *Byerley's* Lordship, *Yorkshire*.

k. 27. This seems to be a green Copper-Ore. Out of a Vein of a Rock near *Eskirher* ----- *Wales*.

k. 28. Copper-Ore. From a Load in *Tolvern-Work*, *Cornwall*.

k. 29. Copper-Ore, *Chefwater*, *Cornwall*.

k. 30. Copper-Ore. From *Trelawood*. Mr. Pollard's Work, *Cornwall*.

k. 31. Copper-Ore. Out of a Tin-Vein from *Poldice*, *Cornwall*.

k. 32. Copper-Ore, holding a little Tin. 'Tis wrought for Copper; from *Gamp*, *Cornwall*.

k. 33. Copper-Ore. From *Cheswater*, *Cornwall*.

k. 34. Copper-Ore. From *Cheswater*.

k. 35. Copper-Ore. From *Cheswater*.

k. 36. Copper-Ore. From *Cheswater*.

k. 37. Copper-Ore. From *Cheswater*.

k. 38. Copper-Ore, poor, hardly worth working; called *Gof-fens*. From *Redruth*, *Cornwall*.

k. 39. Copper-Ore, with Mock-Lead in it. From *Wheal Gilbert*, *Cornwall*.

k. 40. Copper-Ore, somewhat differing. From a Mine near the former, *Cornwall*.

k. 41. Copper-Ore, still a little different. From another Mine in the same Place.

k. 42. Copper-Ore, having a little Mock-Lead in it. From another Vein in the same Place.

k. 43. Copper-Ore. From *Wheel-Rose*. Mr. Tonquin's Work. *Cornwall*.

k. 44. Copper-Ore. From *Tolgash-Downs*, *Cornwall*.

k. 45. Copper-Ore, out of several Mines, belonging to Mr. Henry Exstick, near *St. Just*, *Cornwall*. In some of the old Works here, work'd by Sir Clement Clarke, are numerous Plates of pure native Copper, lying in the common Copper-Ore, in solid Iron Ore. Found in the same Load, and in the Stone, on each side of the Load, or Vein.

k. 46. *Ibidem*. k. 47. *Ibidem*. k. 48. *Ibidem*.

k. 49. Copper-Ore. *Relistion*, *Cornwall*.

k. 50. Copper-Ore. *Trevescas*, *Cornwall*.

k. 51. Copper-Ore. *Wheal Rose*, near *Redruth*, *Cornwall*.

k. 52. *Ibidem*.

k. 53. Copper-Ore, said to be rich. From *Relistion-Work*, *Cornwall*.

k. 54. Copper-Ore, pretty good. From *Trevescas-work*, *Cornwall*.

k. 55. Copper-Ore. From *Treverton*, *Cornwall*. The Salts shooting, 'tis dissolved.

k. 56. Copper-Ore. *Redruth*, *Cornwall*.

k. 57. Iron, and Copper, *Guinear Works*, *Cornwall*.

k. 58. Copper-Ore, with Tin. Mr. Hill's Wood, near *Helfton*, *Cornwall*.

k. 59. Copper Ore. *Zonner-Works*, *Cornwall*.

k. 60. Copper-Ore. From a Mine formerly wrought at *Ash-burton* in *Devonshire*.

k. 61. Copper-Ore, gather'd out of Mr. Trevenion's *Deads*, or *Wafies*, in *St. Stephen's Liberty*: 'Tis work'd by Mr. Wayn. It had  
lain

lain long among the Rubbish of that Mine in great Quantity, *Cornwall*.

k. 62. A Marcasite, with white Spar, out of the same Rubbish, and likewise wrought for Copper.

k. 63. Copper-Ore, red, with green, very rich; out of a Load in *Gwallin Parish, Cornwall*.

k. 64. Copper-Ore, black, very rich. Out of a neighbouring Load, in *Gwallin Parish, Cornwall*.

k. 65. Copper-Ore, very poor, with much Spar. *Eskirher, Wales*.

k. 66. Copper-Ore, from *Tolvern*. They sell it for ----- a Ton. *Cornwall*.

k. 67. Somewhat better Copper-Ore. From another Vein of the same Work.

k. 68. A green Ore, seeming to have a little Copper. From a Vein in *Cleggo-Cliffs, Cornwall*.

k. 69. Copper-Ore. *Northmoulton, Devonshire*. This Ore, with the shivery Slate in which 'tis found, constitutes a Stratum of about 3 Foot thick. The Strata on each side it, are of much like Slate. All the Strata stand edge-ways, or perpendicular. The Work is at present overflow'd with Water.

k. 70. *Ibidem*. k. 71. *Ibidem*.

#### LEAD-ORES.

l. 1. Lead-Ore, white and fibrous from *Barrow-Work*; the Duke of *Somerset's* Mine in *Cumberland*. It lies in a Vein amongst blue Lead-Ore, and yields upon the Assay somewhat above three fourths of Lead.

l. 2. White-Lead-Ore. From the same Vein.

l. 3. White-Ore. From still the same Vein.

l. 4. White-Lead-Ore, partly flaky, and partly fibrous. From a Mine of Mr. *Edward Harley's* at *Eskergallid* in *Montgomeryshire*.

l. 5. *Ibidem*.

l. 6. Another Sample, with a Cast of black. *Ibidem*.

l. 7. l. 8. Two more, of a brown Colour. *Ibid*.

l. 9. A white Mineral, appearing very much like Tincall, having a pungent or saline Taste when first taken up; given me by one of Mr. *Ingram's* Miners. Mr. *Pigg*, Mr. *Harley's* Steward, promis'd me to get more of it. In Complexion, it very much resembles the following Lead-Ore.

l. 10, 11, 12. The Pieces of white, flaky Lead-Ore, very glossy. Found in a perpendicular Fissure amongst blue or Potters Lead-Ore, about 14 Fathom deep; in a Mine of Mr. *Edward Harley's* at *Eskergallid* in *Montgomeryshire*.

l. 13. White-Lead-Ore. From Mr. *Harley's* Mines at *North-Wales*.

l. 14. *Ibidem*. l. 15. *Ibidem*. l. 16. *Ibidem*.

l. 17. Lead-Ore. *Guarnock* near *Truro, Cornwall*.

l. 18. Lead-Ore, of a greenish yellow Colour, cavernous and porous; found partly in Ribs and partly in Lumps, after the Manner of *Boos-work*; in a Vein in *Green-hill*, near *Charter-house*, *Mendip*,

*Mendip, Somersetshire.* There was a considerable Vein of it, and several Pits, near 20 fathoms in it; but it is now deserted.

l. 19. Lead-Ore, of a greenish Colour. *Ibidem.*

l. 20. Another Sample, green with a Cast of brown, owing to the Clay in which 'twas lodg'd. *Ibidem.*

l. 21. Green Lead-Ore concretioned, in a thin Plate to a reddish Stone\*, being part of one side of the Vein. The Stone on the other side is of the same Colour and Constitution. The Lead-Ore on this Sample is shot into little green Crystals. *Ibidem.*

l. 22. Yellow Lead-Ore, *Penrose Work.* By *Helfston, Cornwall.* This is stamped; but seems to be of the same sort with that from *Mendip.*

l. 23. Native-Lead. 'Tis soft, flexible, and cuts with a Knife like melted Lead. This is the only Sample of the Kind I ever saw. Found in a Vein amongst Manganese, in a Mine of that Mineral in *Hartry Liberty, Mendip, Somersetshire.* *Purum autem saxe invenitur Aurum, Argentum, Æs, Argentum vivum, minus saxe Ferrum, & Plumbum cinereum: vix unquam Plumbum candidum & nigrum. Agricola de re Metal. Lib. 5. p. 76. c.*

l. 24. Tessellated, Diced or Cubic Lead-Ore. Out of the Lead-Mines near *Llanidloes, Wales.*

l. 25, 26. Diced Lead-Ore, very ponderous and rich; found about 3 Fathoms deep in Clay, in Mr. *Ingram's Mine* at *Bruntyle* near *Llanidloes* in *Montgomeryshire.* The Mine is but just opened; but the Part where this lay appeared to be the Top of a Vein; and there is a Rib of blue Lead-Ore underneath.

l. 27. Another Piece of Diced-Ore, with coarse white Spar. The Cubes on one Flat are generally small; on the other generally large. *Ibidem.*

l. 28. Diced Lead-Ore. *Ibidem.* l. 29. Diced Lead-Ore, *Id.*

l. 30. Diced Lead-Ore. *Ibidem.* l. 31. Diced Lead-Ore. *Id.*

l. 32. A Lump of blue Lead-Ore, out of a Vein in *Hartry*, on *Mendip.* 'Twas found lying loose and independent about 15 Fathoms deep. The common blue Lead-Ore of *Mendip*, lies in Veins or perpendicular Fissures of the Stone, which are short, irregular and no other than *Bellies.* The Miners here call them *Courjes*†. Into these, several Threads or cross Fissures terminate.

l. 33. Another; from a Vein of a neighbouring Mine.

l. 34. Another; from another of these Mines.

l. 35. Another; from a still different Mine in this Tract.

l. 36. Ore of Lead, with Copper, both very fine. Found, filling a small Fissure of a grey Stone, in a Mine of my Lady *Cambell's*, near *Eströphene, Wales.*

l. 37. *Ibidem.*

\* Mr. Kemp try'd a Stone of a like Colour and Constitution, and obtained Gold out of it. He had it from one, who would not tell him from what Part of England it came.

† Where the Ore lies soft, they call it Country.



*l. 38.* Lead-Ore, in Veins of Stone. *Goginion*, one of the Company's Works in *Montgomeryshire, Wales*.

*l. 39.* Lead-Ore. *Goginion, Wales*.

*l. 40.* A blue Stone, crack'd much after the manner of the *Ludus Helmontij*: and the Cracks partly fill'd with white Spar, striated a-cross, after the manner of the *Septa* of that Body, and partly with Lead-Ore. From *Cumustwith*. 'Tis pretty uncommon. These are only Strings of Ore, and were beat off the Side of a Gill, near the Bottom.

*l. 41.* Another Piece of like Stone, with large *Septa* Strings, or Veins of Lead-Ore, and Spar. The main Crack here was not pass'd quite thro' the Stone. So that those Veins were made by shrinking of the Stone, after the Manner of the *Ludus Helmontij*. *Ibidem*.

*l. 42.* Another. Found along with the two foregoing.

*l. 43.* Another. *Ibidem*.

*l. 44.* Another. The *Septa* chiefly of Lead, and very large. *Ibidem*.

*l. 45.* Another. *Ibidem*. In this Vein, with Lead-Ore and Spar, are some few Sparks of a yellow shining *Marcasite*.

*l. 46.* Another, with a large Vein of Lead-Ore on one Side, terminating in a much lesser Vein of Spar on the opposite Side. *Ibidem*.

*l. 47.* Another, parted at the Vein, so as to shew the Constitution of the Lead-Ore. *Septum. Ibidem*.

*l. 48.* Lead-Ore, small grain'd. *Cumsumluck*, one of the Company's Mines, in *Montgomeryshire, Wales*.

*l. 49.* Lead-Ore, with Copper, and *Marcasite*. *Cumsumluck*.

*l. 50.* Lead-Ore, with white Spar. *Cumsumluck*.

*l. 51.* Talky Lead-Ore. *Goginion, Cornwall*.

*l. 52.* Steel-grained Lead-Ore. *Goginion, Cornwall*.

*l. 53.* Steel-grained Lead-Ore. *Eskirher, Wales*. This Mine they call the *Welch-Potosi*: and a vast Quantity of Lead-Ore hath been rais'd out of it.

*l. 54.* Potters Lead-Ore. *Eskirher, Wales*.

*l. 55.* Lead-Ore. *Estemtean, Wales*.

*l. 56.* Lead-Ore, with *Marcasite*. *Estemtean*. [Dissolv'd.]

*l. 57.* Lead-Ore. *Goginion, Cornwall*.

*l. 58.* Lead-Ore, partly steel-grain'd, and partly flakey. *Goginion*.

*l. 59.* Lead-Ore, with some Sparks of the steel-grain'd Kind: but chiefly flakey, some of the Flakes having a Gloss of Blue. *Goginion*.

*l. 60.* Blue Lead-Ore, very fine and clean. This is only a Lump of *Boos-Work*, out of a Vein; but the greater Part of the Vein was crack'd, and parted, in such sort, that the Parts answer and fit, and tally to one another, like those of the Antimony-Vein at *Endellion*, *Confer. g. 12. supra*. This is very rich in Silver; perhaps beyond any in all *England* besides. This Ore, when only dress'd, sells for 8*l.* a Ton, which is about the Value of Lead itself.



self. One of the Proprietors, and some of the Workmen, averr'd that a Ton of this Lead yields 140 Ounces of Silver. From *Guarnock*, near *Truro*, *Cornwall*. The Vein of Ore was about a Foot over: The Miners say, in some parts they found the Ore near three Foot in Diameter. This lay about 15 Fathom deep.

*l. 61.* Lead-Ore. *Guarnock*, by *Truro*, *Cornwall*.

*l. 62.* Lead-Ore. *Penrose Works*, *Cornwall*.

*l. 63.* Lead-Ore. *St. Myran*, near *Padstow*.

*l. 64.* Lead-Ore. By *Pyrans-Downs*, near *Penryn*, *Cornwall*.

*l. 65.* Lead-Ore. *Towan-Cliff*, near *Pyrans-Sand*, *Cornwall*.

*l. 66.* Lead-Ore. From Lord *Mohun's Park* at *Bowconick*.

*l. 67.* Lead-Ore. *Crowan-Parish*, Sir *John St. Aubin*, *Cornwall*.

*l. 68.* Lead-Ore. *Penworteley*, near *Truro*, *Cornwall*.

*l. 69.* Remov'd to its proper Class.

*l. 70.* Blue Lead-Ore, vein'd with white Spar. From *Eskergallid* in *Montgomeryshire*. Mr. *Harley's Lead-Mine*.

*l. 71.* Blue Lead-Ore; found near *Dolgadwin*, in *Montgomeryshire*. 'Twas turn'd up by the Plough: and suppos'd to have been formerly dropt. The Crust was superinduced by the Weather: at least, I have seen a like Crust induced upon Pieces that had so lain long expos'd.

*l. 72.* A Lump of blue Lead-Ore, compos'd of two or three Crusts of a sparkling Lead-Ore, broken, and exhibiting a Cavity within, in which are some talky crystalline Shoots; out of a Vein in *Hartry*, on *Mendip*, *Somersetshire*. 'Tis hollow, after the manner of the *Geodes*, and the echinated crystalline Balls.

*l. 73.* Lead-Ore. *Relistion Works*, *Cornwall*.

*l. 74.* Potters Lead-Ore. Mr. *Peck's Mine*, at *Delivy*, *North-Wales*.

#### TIN-ORES.

Of Tin Ores *m. 1.* Shoad-Stones, found several Fathoms deep, in general, but above the Rock, or solid Stone, on *St. Agnes-Vid.* *m. 88.* Ball, of several Sizes. These, and those *Nº e. 12.* infra. and *m. 41.* were taken fresh out of the Shoad; and yet by the smoothness of their Surfaces, appear to have been worn by Water; which must have been before they were lodged in this Shoad.

*m. 2.* Tin-Grains, from several Veins of the Mines near *St. Agnes, Cornwall*. The Crystallizations of these are not so distinct, that a certain Judgment can be pass'd of their Figure.

*m. 2<sup>x</sup>.* A Mass of Tin-Grains, several seeming to be concreted into one; so that nothing can be ascertain'd as to their natural Figure. From the same Mine.

*m. 3.* Tin-Grains, from *Cleggo-Cliffs*, and the Sands at the Foot of them, *Cornwall*. Among these there are several Instances of the Tin, incorporated with Crystal, shooting into a quadrilateral pyramidal Figure.

*m. 4. Ibidem.* All these Grains, that are distinct, and fair, are in form of quadrilateral Pyramids.

*m. 5.* Tin-Grains; from *Zonner-Work, Cornwall*, near *St. Ives*. The Tin-Ore, got in these Mines, is more considerable for its Richness, than its Quantity. The *Zonner Tin-Ore* is the richest in *Cornwall*.

*m. 6.* Tin-Grains; from *Polgouth, Cornwall*.

*m. 7.* A Piece of Tin-Ore, ponderous, and very rich. Out of a Mine, near *St. Agnes, Cornwall*.

*m. 8.* Green Tin, very rich, and fine; out of a Shoad, or Stream-Work, at *Whole, Cornwall*. Confer. *i. 18. supra*, & *m. 12. & m. 88. infra*.

*m. 9.* Tin-Grains, of a Figure more oblong than any I ever saw: and not unlike the *Cornish* Diamonds in shape. From *Vellanuraine, Cornwall*.

*m. 10.* Tin-Granes. *Cornwall*. Mr. *Causter* of *Redbrook*. There are, in this, several Grains distinct, and of a quadrilateral pyramidal Figure.

*m. 11.* Tin-Grains; from *Vellanuraine*.

*m. 12.* Grain-Tin, very rich, and fine; out of a Shoad, or Stream-Work, at *Whole, Cornwall*. Conf. *i. 18. and m. 8. supra*, and *m. 88. infra*.

*m. 13.* Tin-Grains. *Zonner-Work, Cornwall*.

*m. 14.* Tin-Ore, very rich; from *Trewan*.

*m. 15.* Tin-Grains, very fine; from a Vein of a Mine in *Vellanuraine, Cornwall*.

*m. 16.* Tin-Grains, the Soil of the Vein red; from *Vellanuraine*. These Grains are in quadrilateral Pyramids.

*m. 17.* Tin-Grains, with Spar, white, purplish, and one Spark of a bright smaragdine Green; out of a Tin-Mine near *St. Agnes*.

*m. 18.* Tin-Grains, very fine; out of a Vein near the precedent. *St. Agnes*.

*m. 19.* A Mass, with transparent Shoots, that by their Complexion, seem to hold Tin; which, if they do, is a great Curiosity. From a Mine near *St. Agnes*.

*m. 20.* Tin-Ore, with Grains, and Spar. From *Zonner-Work*. Vid. *m. 27. infra*.

*m. 21.* Tin-Ore, very rich, with a Vein of Spar, and Tin-Grains; from *Vellanuraine*.

*m. 22.* Tin-Grains; from *St. Agnes*. Those that appear distinct, are quadrangular and pyramidal.

*m. 23.* Tin-Ore, with Grains; from *Guinier-Work, Cornwall*.

*m. 24.* Tin-Grains, black, very bright and shining, with white Spar. *Religion, Cornwall*.

*m. 25.* Grey Stone, with Tin, Spar, and Marcasite crystalliz'd upon it; from *Gamp*. Mr. *Tonquin's Work, Cornwall*.

*m. 26.* Tin-Ore, from *Trewan*, very rich. Indeed the black Tin is ever all of the same Richness, and yields alike.

*m.* 27. Tin-Ore, from *Zonner*; out of the same Shaft with *N<sup>o</sup> m.* 20. *supra*.

*m.* 28. Tin-Grains; from *St. Agnes*.

*m.* 29. Tin-Grains; from *St. Agnes*.

*m.* 30. Tin-Ore, with Grains, and Spar, very rich. It adher'd to the Stone of the side of the Vein. This is of a pale Colour, near white, having in it several extremely small Veins of Tin-Ore. From *Zonner-Work*.

*m.* 31. Another, still somewhat more clear, and free; being as rich as the Tin-Grains. From *Zonner*. All that is glossy, and shines in it, is of the same Constitution with the Tin-Grains.

*m.* 32. Another Sample, with Spar, and Grains. From the same Mine.

*m.* 33. Tin-Ore, of a rusty brown, very rich; from *Fatwork*.

*m.* 34. Tin-Ore, rich; from *St. Agnes-Ball*.

*m.* 35. Another Sample, very rich, with Sulphur in it; from the same Place.

*m.* 36. Rich Tin-Ore, grey, intermingled with white Spar; from the side of a Vein, or Load, at *Fatwork*.

*m.* 37. Tin-Ore, very rich. *Creekbrans*, by *Poldice*.

*m.* 38. Tin-Ore, very rich; from *Woodyate*. Mr. *Pollard's* Works.

*m.* 39. Tin-Ore, extreme rich; from near *Redruth*.

*m.* 40. Tin-Ore, very rich; from *St. Agnes-Ball*.

*m.* 41. A Shoad-Stone, rich, in Tin: and having Tin-Grains crystalliz'd in a Sinus of it. Found on *St. Agnes-Ball*, along with *e.* 12. *supra*, and *m.* 1.

*m.* 42. Tin-Ore, very rich, Part of a Vein; from *St. Agnes-Ball*.

*m.* 43. Tin-Ore, of a brownish grey, with a Vein of white Spar; from *Fatwork*.

*m.* 44. Tin-Ore, very rich. The richest Part is of a dusky Colour, with a Blush of red. From *St. Twist-Ball*.

*m.* 45. Tin-Ore, not so rich. From another Shaft on the same Ball.

*m.* 46. Tin-Ore, very rich. From a Load, *Polgouth*. This vast Mine is now under Water; but they are in hopes of draining it.

*m.* 47. Tin-Ore, grey, rich, with white Spar. From a Work near *Fatwork*.

*m.* 48. Tin-Ore, of a dusky brown, near black; with small Tin Grains. From a Work near *Fatwork*.

*m.* 49. Tin-Ore, pretty rich. From *Zoan-Coniggan*.

*m.* 50. A Piece of glossy Tin-Ore, very rich, and near as fine as the Tin-Grains. *Fatwork*.

*m.* 51. Tin-Ore, of a dusky Hue, very rich. From *Vellanuraine*.

*m.* 52. Tin-Ore, with Cockle, pretty rich in Tin. From *Treviddo Ball* near *St. Ives*.

*m.* 53. Another, with small Tin-Grains. From the same Place.

*m.* 54. Tin-Ore. From *Redruth*.

m. 55. Tin-Ore, with Cockle, i. e. Talc, striated or fibrous: From *Treviddo-Ball*, near *St. Ives*.

m. 56. Tin-Ore, poor and talky. From a Shaft on *St. Twist's-Ball*.

m. 57. Tin-Ore, abounding in Talc. From *Zowan-Coniggan*.

m. 58. Tin-Ore, with Grains finely crystalliz'd. From *St. Agnes-Ball*.

m. 59. Tin-Ore, grey; of the midling sort. From a Mine near *Merva-Ball*.

m. 60. Tin-Ore, of the better sort; from a Vein in *Cleggo-Cliffs, Cornwall*.

m. 61. Tin-Ore; from *Port-kellis*.

m. 62. Tin-Ore, with Mundick; *Fus-Hill*, near *Wakehampton*; in *Devonshire*.

m. 63. Tin-Ore, very rich, of a glossy brown Colour, with a small Intermixture of Sparks of Marcasite; from a Work near *Fatwork, Cornwall*.

m. 64. Tin-Ore, rich; from a Load in *St. Stephen's Liberty, Cornwall*.

m. 65. Tin-Ore, a flat Piece, that fill'd the Vein; from *St. Agnes-Ball, Cornwall*.

m. 66. A Piece of talky Stone, with part of the Vein of Tin adhering to it; from *Treviddo-Ball*. In this the Talc of the Stone is flakey, that of the Vein fibrous.

m. 67. Tin-Ore, from *St. Twist's-Ball*.

m. 68. Tin-Ore; from the side of a Cavity of a Vein shot into grumose Efflorescencies. *Fatwork*.

m. 69. White Tin-Ore; *Carénky-Works, Cornwall*.

m. 70. Blue Tin-Ore; *Portkellis, Guindon-Parish*.

m. 71. Tin-Ore; from *Hard-head*, near Mr. Nancy's, *Cornwall*.

m. 72. Tin-Ore. *Godolphin-Ball*. Pretty good.

m. 73. Another sort, with a Vein of Tin-Grains; from *Godolphin-Ball*.

m. 74. Tin-Ore, from *Gamp*, Mr. Tonquin's Work.

m. 75. Tin-Oré, from *Gamp*, Mr. Tonquin's Work.

m. 76. Tin-Ore, with Marcasite. From *Godolphin-Ball*.

m. 77. Tin-Ore, from *Zonner-Work*; with Tin-Grains, small, but very fine.

m. 78. Tin-Ore, with Tin-Grains, finely crystalliz'd; from *St. Agnes-Ball*.

m. 79. Tin, Copper, Mundick, Spar, and Mock-Lead, in one Stone; *Trevescas-Works*.

m. 80. Tin-Ore; *Lannar*, in *Guinop*.

m. 81. Tin-Ore, rich; from *St. Agnes-Ball*.

m. 82. Tin-Ore, of a brownish grey Colour, rich vein'd and intermix'd with white Spar; from a Work near *Fatwork*.

m. 83. Tin-Ore, extremely rich; from *Polgouth*.

m. 84. Tin-Ore, sparry; from *Godolphin-Ball*.

m. 85. Tin-Ore, pretty rich; from *Godolphin-Ball*.



*m.* 86. Tin-Ore, with *Cornish* Diamonds crystalliz'd along with it; from a Work near *St. Agnes-Ball*.

*m.* 87. Tin-Ore, lying in dusky red Spots, very rich; with Cockle, and white Spar. It shews the full breadth of the Load or String. From - - - - - near *Roche, Cornwall*.

*m.* 88. Tin-Ore, very good, in white Spar; being a Piece of a *Squat*, at *Hewas-Work*; not far from *Polgouth*, in *St. Stephen's* Liberty. 'Tis broke off near the Edge of the *Squat*; and has adhering some of the cretaceous Matter of the Killas to each Surface. Tin-Ore is found lying in four several Methods: 1°. In *Fissures*, *Veins*, or *Loads*. 2°. In *Shoads*, which are Trains of Matter, driven by Water from the Loads, and lying above the Rocks, at or near the Surface, sometimes bare to the Day; and sometimes cover'd with Earth and Rubble, to three, six, or ten Foot deep. That at *Whole\**, is the only fresh Shoad-Work, or Stream-Work, at this day in Working in all these Parts. 3°. *Pedankarn*, which is Tin-Ore interspers'd in Sparks in the Strata of Growan. It is rarely found in this Form; there are only two small Works of this sort now a going in all *Cornwall*; the one at - - -, the other at - - - - - , both near *Godolphin-Ball*. 4°. *Squat*, or *Flat-Work*. This also is very rare. I know no Work now going forward in *Cornwall* of this sort, except three or four Shafts at *Hewas*. The *Squat* consists of Tin-Ore and Spar, incorporated in much the same manner as in the Loads. The *Squat* is of a flat Form, thickest in the middle, and gradually lessening all round, so as to terminate in Edges. It is not round; but generally extended in length farther one way than another. I saw none above a Foot thick in the middle; but am told they find them to three Foot thickness. The largest extend to ten or twelve Foot in breadth, and eighteen or twenty in length. Some are small: I observ'd one but about two Foot long. They are commonly broke and parted by Fissures, after the manner of the *Ludus Helmontij*, tho' not near so regularly; and the Fissures are at two, three, or four Foot distance. I observ'd Cavities in several of them; there is indeed a small one in this Sample, *m.* 88. with Spar, *Cornish* Diamonds, or Crystals, shot in them. Those I saw lay about twelve Fathom deep, but they are found, uncertainly, at several Depths, even in the same Work, lying under one another. They are found only in Killas, and lie parallel to the Grain of the Stratum of the Killas, which is a fissil Stone. Those I observ'd lay with their Length stretching to the Rise and Dip of the Killas. In these Works of *Hewas* there was a Stratum of Growan lay above the Stratum of Killas; a thing rarely observed elsewhere.

*m.* 89. Tin-Ore, from *Nuns, Dartmore*, in *Devonshire*.

\* See Samples out of this Shoad, i. 18. supra; also *m.* 8. and 12. supra.



*m. 90.* Tin-Ore, the best which that Vein affords, tho' poor, grey, vein'd with red; from *Hewas-Work*, not far from *Polgouth*. *Vid. m. 93. infra.*

*m. 91.* Burnt Tin, from the great Melting-house by *Truro*. This has undergone a previous Calcination to pass off the Copper and Sulphur; and fit it for Fusion.

*m. 92.* Tin-Ore, from *Trevan*, very rich.

*m. 93.* Poor Tin-Ore. grey with Blend; from the top of the Vein in which *m. 90. supra*, was found.

*m. 94.* *Pedonkarn*, a sort of Tin-stone. The Tins lodg'd in dusky grey Specks in a pale grey Stone, part of a Stratum. There are Micæ, as also white Spar amongst it. From *Trowa*, in *Breag-Parish*, *Cornwall*.

*m. 95.* Part of a Shoad born off the same Stratum, and lying, amidst many others, near the Quarry, for such indeed it is, or Mine, out of which the preceding was got.

*m. 96.* *Growan*, part of a Stratum, with Micæ in it. Found near the former, at *Trowa*, in *Breag-Parish*.

*m. 97.* Part of the same Stratum, holding a little Tin.

*m. 98.* Tin-Ore, white; from *Morva-Ball*. The Tin is in black Grains; and there are Micæ in it. This is of their midling Ore.

*m. 99.* Killas, grey; with Micæ and Veins of Tin in it. From *St. Agnes-Ball*.

*m. 100.* Tin-Ore. From *Fatwork*.

*m. 101.* Tin-Ore, variegated with black, red, and pale brown. Part of the Mass is concreted into Grumuli. From *Crowder*, about a mile from *Fatwork*. 'Tis pretty rich of Tin.

*m. 102.* Another Sample, as rich, black and red; from another Vein, in *Crowder*.

*m. 103.* Tin-Ore, red, very rich; from *Vellanuraine*.

*m. 104.* Tin-Ore, in a dusky red Mineral; from near *Redruth*.

*m. 105.* Tin-Ore, of a red Colour; with Tin-Grains, black. It is very rich. Found in considerable Quantity in a Load in *Gwal-len-Parish*.

*m. 106.* Red Tin-Ore, pretty rich, out of the same Vein.

*m. 107.* Red Tin-Ore. This is a poor Ore. From *Morva-Ball*.

*m. 108.* Tin-Ore. *Welred*, in *Lelant-Parish*.

*m. 109.* Tin-Ore, pretty rich; from *Trelawood*, Mr. Pollard's Work.

*m. 110.* Tin-Ore, of a poorer sort; from *Tolvern*.

*m. 111.* Tin-Ore pretty good; from the same Place.

*m. 112.* Red Tin-Ore. *Carenky Works*.

*m. 113.* A Body, porous and cavernous; holding some small Quantity of Tin, for which it is work'd. *St. Agnes-Ball*.

*m. 114.* Tin-Ore, with some shew of Copper; from *Tremelloz*. The same Vein yields in some parts Tin, in others Copper.

*m. 115.* Tin-Ore; from a Vein of *Crowther Work*.

m. 116. Another, paler, but as rich; from a Vein in the same Liberty.

# IRON ORES.

n. 1. A brown, powdery Spar. They say it holds Iron. Found amongst the Iron-Ore, *Clouerwall*, in the *Forest of Dean*, *Gloucestershire*. Those of *Clouerwall*, and those of *Stainton*, are the Iron-Mines of chief note here.

n. 2. Two Pieces of white, friable, crisply Spar, with Iron Cylinders in them. There were more. The Cylinders lay in the Spar, generally parallel; and only a very few cross-ways. Found with the former.

n. 3. *Ibidem*.

n. 4. *Diaphanous* Spar, shot into Rhomboids; and, by Intervention of Iron-Ore, form'd into Cylinders, or *Stalactitæ*. Out of a Fissure, having in it much Iron-Ore. *Ibidem*.

n. 5. *Ibidem*.

n. 6. *Stalactitæ* composed of Iron-Ore, with a Congeries of *Rhomboid* Crystals, transparent with a Cast of *Yellow*. Out of the Iron Veins. Breaking and examining a vast deal of this Ore, I observed all the Crystals and crystalliz'd Spars, and every thing that was shot, had, generally, a Tendency to a *Rhomboid* Figure.

n. 7. More, *Rhomboid*, and cruited round small *Iron Stalactitæ*.

n. 8. More, very small. In this Mass are several *Iron Rhombs*.

n. 9. *Talky Spar*, brown, form'd into *Rhombs*, and affix'd upon *Iron Stalactitæ*.

n. 10. *Iron Rhombs*, found amongst the Ore in the Iron Veins, *Clouerwall*. I observed some of them of a red Colour, others black, others brown.

n. 11. *Ibidem*.

n. 12. *Ibidem*.

n. 13. *Ibidem*.

n. 14. *Ibidem*.

n. 15. *Ibidem*.

n. 16. *Ibidem*.

n. 17. *Ibidem*.

n. 18. Besides the *Rhombs*, there are in this several Cylinders, striated like the *Hæmatites*.

n. 19. Brushy Iron-Ore, with Iron Rhombs.

n. 20. Brush Iron-Ore, or Iron *Stalactitæ*. Several of the *Stalactitæ* are striated, like the Crusts of the *Hæmatites*, from their Surface towards their Axis. I examin'd a vast many others, and found them striated in like manner.

n. 21. *Ibidem*.

n. 22. *Ibidem*.

n. 23. *Ibidem*.

n. 24. *Ibidem*.

n. 25. *Ibidem*.

n. 26. Iron-Ore, with small Bits of a white semi-diaphanous Spar scatter'd in it.

n. 27. Brush Iron-Ore.

n. 28. Brush Iron-Ore, ramose.

n. 29. Small Iron Columns, fretted over with Spar. They are parallel to each other; but intercepted by various tranverse Iron Plates.

n. 30. This and the following Iron-Ores, to n. 39. inclusive, from Grotto's in the Mines; and the Tops of the old deserted Works; about *Clouerwall*.

n. 31.

n. 31. *Ibidem.*n. 32. *Ibidem.*n. 33. *Ibidem.*n. 34. *Ibidem.*n. 35. *Ibidem.*n. 36. *Ibidem.*n. 38. *Ibidem.*n. 39. *Ibidem.*

n. 40. *Hæmatites*, out of the Top of a Manganese Vein, about three Fathoms from the Surface. *Hartry-Liberty, Mendip.*

n. 41. Another Sample; from the same Vein.

n. 42. A Piece of very hard Iron-Ore; found about twelve Fathom deep, at the bottom of a Manganese Vein, in one of those Mines. It appears to be pretty rich in Iron.

n. 43. A Mass of Iron-Ore, having on one side small *Stalactitæ*, after the manner of the brush Iron-Ore. From another of the Manganese Veins. *Ibidem.*

n. 44. A Mass of Iron-Ore, with Spar crystalliz'd upon it, very much like that of the *Langron-Ore*. *Ibidem.*

n. 45. Iron-Ore, poor; from *Mervia-Cliff, Cornwall.*

n. 46. Iron-Ore, part resembling the *Hæmatites*. From a Load or Vein near *Pyran-Sands, Cornwall.* The Vein has been work'd formerly, and is vastly large.

n. 47. Iron; from *Lenevet-Parish, Cornwall.*

n. 48. Iron-Ore. *Pyran-Sands, Cornwall.*

n. 49. Iron-Ore, *Relistion*, very rare, *Cornwall.*

n. 50. Iron-Ore, *Lizard-Point, Cornwall.*

n. 51. Iron-Ore, *Poldice, Cornwall.*

n. 52. Iron-Ore, in form of the *Ludus Helmontij*, only the Cracks are empty, excepting that there are a few Grains of Crystal or Spar in some of them. There are Samples of these Grains loose, &c. 199. *supra.* Iron Mines betwixt *Lanethly* and *Pontipool*. This sort is call'd there *Pin-Ore*. See more of it, *infra*, n. 53, & *seq.*

n. 53. A Body appearing to be of the same Constitution with the *Ludus Helmontij*, only the Septa are very numerous, so that it must have been much shatter'd. They consist of Iron-Ore; the Tali of a fine soft red Ochre, that would be very apt to crack, part and shatter. From the same Mines.

n. 54. A Piece broke off the precedent Body.

n. 55. Two small Pieces of a *Ludus Helmontij*. The Septa Iron-Ore very fine, of a dusky brown Colour; the Tali of a grey soft Stone. From the same Mines.

n. 56. Septa, of the *Pin-Ore*, composed of several Plates. From the same Mines.

n. 57. *Ibidem.*

n. 58. This, and the six following Iron-Ores, to n. 68. inclusive, from Major *Hanbury's* Works near *Pontipool*. They call this sort *Pin-Ore*. 'Tis in *Nodules* of the *Ludus Helmontij* Kind, and lies in Strata of Shiver over the Coal. See more of this, n. 52. *supra.* It seems to shrink and crack more when brought up into the Air; as the *Ludus Helmontij* also does. I observed the *Ludus Helmontij* near *Highgate*, when exposed to the Air, shiver'd all to pieces.

n. 59. *Ibidem.*

n. 60. *Ibidem.*

n. 61. *Ibidem.*

n. 62. *Ibidem.*

n. 63. *Ibidem.*

n. 64. *Ibidem.*

n. 65. This seems to be rich, but runs difficultly, so that the Miners do not much value it. 'Tis ever found in flat Masses, in form of Cakes. *Pontipool.*

n. 66. Another, of like kind, from the same Mine.

n. 67. A brownish grey Iron-Stone, lying in thin Strata, crack'd, and parted into Tali. These Strata lie, some above, others under the Coal. 'Tis poor, but runs freely. *Pontipool.*

n. 68. A Sample, of another Stratum, of the same Mine.

The Iron-Ore, at Major *Hanbury's* Works, at *Pontipool*, is of two sorts. The first is form'd into Masses, after the manner of the *Ludus Helmontij*. These lie, irregularly, above the Bed of Coal there, and is call'd *Pin-Ore*. Some of them have shrunk so much, and consequently the Partitions are so wide, that there is near as much void Space as Substance in the Body. Where those Spaces are fill'd, or Septa found, they are ordinarily of Iron-Ore; as those of the common *Ludus Helmontij* are of Spar. The other sort of Iron-Ore, here, lies in Strata, about nine Inches thick, all crack'd into Squares, and oblong Figures, so as to appear like a Pavement.



*A CATALOGUE of the Additional Ex-  
traneous English Fossils; viz. Shells, Teeth,  
Bones, and other Parts of Animals, chiefly  
Marine.*

*As also of V E G E T A B L E S, digged up in  
England.*

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## *Additional Extraneous English Fossils.*

### PECTINES.

- a. 1. A Pecten, out of the Cliffs near the River's Mouth, by *Bridport, Dorsetshire.*
- a. 2. A Pecten, found at a considerable Depth in the Earth below three Strata of Stone, at *Stoke*, twenty-four Miles from Sea, in the Mannor of *Castle Cary, Somersetshire.*
- a. 3. A Bivalve, from the West-side of *Portland.*
- a. 4. A very fair Pectunculus, one Valve echinated, or spiked. Out of a Chalk-pit near *Carshalton, Surrey.*
- a. 5. A Scallop. Out of a Chalk-pit, near *Croydon.*
- a. 6. An echinated Pectunculus, found 25 Foot deep, in the great Chalk-pit beyond *Croydon, Surrey.*
- a. 7. A Pecten, out of a Chalk-pit on *Barkhamstead-Common, Hertfordshire.*
- a. 8. Impression, of a Scallop, on a grey Flint. *Ibid.*
- a. 9. A Pecten. This appears about the Margin, not unlike the bottom of a Balanus; from a Chalk-pit near *Croydon.*
- a. 10. A Pecten. *Ibid.*
- a. 11. Another, less. *Ibid.* The same Pit.
- a. 12. Another. *Ibid.*
- a. 13. Impressions of two very small Pectens, in a grey Flint. *Barkhamstead-Common.*
- a. 14. An Impression of a small Pecten, upon an Achate. Found upon a Hill near *Croydon.*
- a. 15. A brown Flint, having upon it the Impression of one Valve of a Shell, that appears to be of the common Cockle-kind. Found near *Croydon.*
- a. 16. A Pecten, from the West-side of *Portland.*
- a. 17. An Impression of a Pecten upon a flinty Pebble; found in a Field near *Keston, by Bromley Kent.*
- a. 18. A Pectunculus, *Pyrtou-Passage.* We find of this Kind at *Whitton, in Lincolnshire.*
- a. 19. Found in a Chalk-pit, near *Croydon, Surrey.*
- a. 20. A Pecten; from *Honeycomb-Lays*, a great Quarry in *Maisy-Hampton-Parish, Gloucestershire.*

### OSTREA.

- a. 21. A Pair of Oyster-Shells, of the common sort, digg'd up, among great Numbers of others, about 14 Foot deep, in a Bed of brown Sand, that lay over a Stratum of Chalk. In a Valley about a Mile from *Hertford.*

a. 22. A Pair of Oyster-Shells; from *Catsgrove*, half a Mile North of *Reading*. There were vast numbers of them, in a Stratum of Sand, of about a Foot thick, and lying about 25 Foot underneath the Surface. The Pit is very large: and wrought for Chalk, and for Brick-Clay. 'Tis upon the Top of a Hill. The uppermost Stratum is of Gravel, about two Foot thick. Then Clay of various Colours, purple, blue, red, liver-colour, 33 Foot. Next the Sand, with the Oyster-Shells, composed of Grains, greenish, black, and white, one Foot thick. Under this a dusky Clay, with some Oyster-Shells in it, but very tender and rotten, a Foot thick. Underneath Chalk, in which the Workmen have sunk near 20 Foot without finding the Bottom. In this I observ'd only Fragments of the *Pinna Marina*; and one plicated *Echinus*. I observ'd in other Pits work'd for Chalk, Gravel, &c. the like Oyster-Shells, in a Bed of Sand, of the same sort with that set forth above, and of much the same Thickness; in some Places 15, in others 20 or 25 Foot deep, for two Miles on every side *Reading*. Mr. Steele.

a. 23. A Pair of Shells, of the common Oyster-kind. *Beckingham*, betwixt *Bromley* and *Croydon*. Out of a Marl-Pit.

a. 24. A Pair of Oyster-shells, parted so as to shew a Stone cast in the Cavity of them, very fair and curious. Found at a considerable Depth in the Earth, below 3 Strata of Stone; at *Stoke*, 24 Miles from Sea, in the Mannor of *Castle-Cary*, *Somersetshire*. Sent by Mr. Player.

a. 25. Several Shells, and particularly the flat Valve of a large Oyster, in Stone. Found in digging Clay for Tiles, near *New-Cross*, by *Deptford* in *Kent*.

a. 26. An Oyster-shell; found betwixt *Oxford* and *Einsham*, *Oxfordshire*.

a. 27. One Valve of an Oyster-shell. Found, in great Numbers, on the plough'd Lands, with other Bivalves, near *Ailesbury*. They are found in all Parts round the Town.

a. 28. The upper Shell of an Oyster. Found in a Chalk-Pit, near *Croydon*, *Surrey*.

a. 29. A Mass of Stone, having in it an *American Tree-Oyster*, and several *Belemnites*. Found at a considerable Depth in the Earth, below 3 Strata of Stone; at *Stoke*, 24 Miles from Sea, in the Mannor of *Castle-Cary*, *Somersetshire*. Mr. Player.

a. 30. *Orites Plotij*. *Fairford-Field*, *Gloucestershire*. This is the upper, or flat Valve, of a kind of small Oyster; and is found here very commonly. But the other, or concave Valve, being more tender and brittle, is rarely found whole.

a. 31. The upper Valve of a small Oyster. Found near *Biffeter*, in a Stone-Pit, near *Blackthorn-Hill*.

a. 32. A small Pair of Oysters; found, on the Shores, on the East-side of *Creek*, about a Mile above *Weymouth-Bridge*.

a. 33. A *Pectunculus rostratus*. Found, amongst great Numbers of the same, and other sorts, in the Gravel on *Wickball*, an high Hill near Mr. *Windam's* House, about 4 Miles from *Wilton*, *Wiltshire*.

a. 34. A *Concha rostrata*. *Wooton*, *Oxfordshire*.

a. 35. A crass *Concha*. Found near *Ailesbury*.

a. 36. One Valve of a large *Concha*; from a Hill near *Einsham-Ferry*, *Oxfordshire*.

a. 37. Small Bivalves; from the West-side of *Portland*.

a. 38. Five Shells; found, about 50 Foot deep, in the great Chalk-Pit on the South-East of *Croydon*.

*Concha rugosa, Rostrum recurvo* \*.

a. 39. *Concha rugosa*; found on the Brow of a Hill on the West-side of *Bath*.

a. 40. *Concha rugosa*; from *Charleton*, 8 or 10 Miles from *Lincoln*, in *Lincolnshire*.

a. 41. *Concha rugosa*; found in a Gravel-Pit on *Hampstead-Heath*.

*Concha Anomia laevis*.

a. 42. *Concha Anomia*. *Lansdown*, near *Bath*.

a. 43. A *Concha Anomia*; found in digging a Ditch near *Bissiter*, *Oxfordshire*.

a. 44. *Concha Anomia*; found in a Chalk-Pit near *Deptford*.

a. 45. *Concha Anomia*. *Lansdown*, near *Bath*.

a. 46. *Concha Anomia laevis*. From a Chalk-pit near *Guildford*. *Dr. Sheppard*.

a. 47. A *Concha Anomia*; found, among several others, in a Chalk-pit near *Chatham*.

a. 48. A *Concha Anomia*; found in digging of a Ditch, near *Bissiter*, *Oxfordshire*.

a. 49. A *Concha Anomia*; out of a Stone-pit on *Blackthorn-Hill*, near *Bissiter*.

a. 50. A *Concha Anomia*; out of a Quarry at *Womandham*, in *Leicestershire*, upon the Borders of *Rutland*.

a. 51. *Conchites Anomius*, form'd of Flint, the Shell being perished, but the Impression of the Outside of it preserv'd; in a grey Flint, found near *Wickham*, *Kent*.

a. 52. A *Concha Anomia*, fill'd with a white crystalliz'd Spar, and lodg'd in a grey Flint. Found near *Cesar's-Camp*, beyond *Bromley*, *Kent*.

*Concha Anomia striata*.

a. 53. *Concha Anomia*. Found near *Worksworth*, in the Peak, in *Derbyshire*.

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\* This Species is common on the Shores of *Yorkshire*, near the Mouth of the River *Tees*.

a. 54. A striated *Concha Anomia*. From Chiselmhurst, betwixt Bromley and Dartford, in Kent.

a. 55. *Pectunculus Anomius*; found in a Chalk-pit, in the great Field near Epsom-Church, Surrey. There are found *Echini Ovarij*, *Cordati*, & *Galeati*, in the same Pit.

a. 56. *Concha Striata*. Coln St. Allens, Gloucestershire.

a. 57. *Concha striata*. *Ibidem*.

a. 58. A *Concha Anomia*, fulcated; found in a Chalk-pit, near Chatham.

a. 59. *Pectunculus Anomius*, fill'd with crystalline Spar. Fairford-Quarry.

a. 60. A Flint, found in a small striated *Concha Anomia*. Out of the middle of a large Flint, near Barkhamstead.

a. 61. A *Concha Anomia striata*, in black Flint; out of a large Chalk-pit, near Whelpley-Hill, Hertfordshire. The Place is call'd *Cross of the Oak*, 2 Miles from Barkhamstead.

#### POLYLEPTOGINGLYMI:

a. 62. Out of a Stone-pit, near Dinton-Mill, about 3 Miles from Ailesbury.

a. 63. Found near Ailesbury.

a. 64. Out of a Quarry near the Church of Melbury-Abbas, Dorsetshire.

#### *Pectunculi leves.*

a. 65. A *Bivalve*, seeming to be of the same Species with that commonly dug up at Richmond. English Catalogue, Part 2. f. 433. This was found upon the very Top of a very high Mountain call'd *Wimple*, near Radnor, in Radnorshire, on the Borders of Herefordshire.

a. 65\*. The *Pectunculus maximus subfuscus*. List. Hist. Conchyl. N<sup>o</sup> 108. compress'd by some external Force. There is of the *Pyrites*, concreted upon the Outside, and probably likewise the Inside of it. From the great Clay-pit near Richmond.

a. 66. A *Pectunculus*, out of a Chalk-pit, near Croydon, Surrey.

a. 67. Spar, in Form of a *Pectunculus*; out of the Sea-Cliffs, near Bridport, Dorsetshire.

a. 68. Another Specimen. *Ibid*.

a. 69. Out of a Stone-pit, near Dinton-Mill, about three Miles from Ailesbury, Buckinghamshire.

a. 70. Found near Ailesbury.

a. 71. Two Pair. Found near Bromley, Kent.

a. 72. A large *Pectunculus*. Out of the Cliffs near Bridport, Dorsetshire.

#### *Pectunculi fasciati.*

a. 73. Out of a Stone-pit, near Dinton-Mill, Buckinghamshire.

a. 74. Found at Stoke, in the Mannor of Castle-Cary, Somersetshire.

a. 75. Found, amongst a vast Number of the same sort, and others, at the Depth of 4 Foot, in digging a Ditch, at *Orset*, near *Tilbury*, in *Essex*.

*Pectunculi striati.*

a. 76. Found near 60 Foot deep, in the great Clay-pit, *Richmond*, *Surrey*.

a. 77. A *Pectunculus*, found in a Stone-pit in a Field call'd *Hawtson*, in the Parish of *Can*, near *Shafton*, *Dorsetshire*.

a. 78. Found, near a. 74. *supra*, at *Stoke*, *Somersetshire*.

a. 79. An Impression of a *Pecten*, upon a flinty Pebble; found in a Gravel-pit, near *Bromley*, in *Kent*.

TELLINÆ.

a. 80. *Tellina*; found at *Stoke*, *Somersetshire*.

a. 81. From the great Quarry. *Portland*.

a. 82. Found at *Lansdown*, near *Bath*.

CUNEI.

a. 83. Out of a Tile Clay-pit, in *Childrens-Field*, in the Parish of *Thurnham*, 3 Miles from *Maidstone*, *Kent*.

a. 84. A *Bivalve*, with a most beautiful pearly Coat; covering a very fine Brass-like *Pyrites*. Found in a Clay-Pit behind *Trinity-Chapel*, at the End of *Bond-street*, *Piccadilly*.

a. 85 & 86. Two Pair of *Bivalves*, of the same Species with those f. 586. in the *English Catalogue*; found near *Woolwich*.

a. 87. Out of a Stone-pit, near *Dinton-Mill*, *Bucks*.

a. 88. A *Bivalve*, from the Top of *Wolston-Hill*, in *Gloucestershire*, four Miles from *Tewksbury*. All the Stone is vastly full of Shells. Mr. *Derham* took the Height of this Hill by a Quadrant, and found it 3 Furlongs perpendicular.

a. 89. Out of a Stratum, 2 Foot deep, at *Edgecomb*, near *Croydon*. This Stratum was thick set with Shells of the same sorts with those found at *Stifford*, in *Essex*, in several Places on *Black-Heath*. and in various other Parts of *Kent*, *Essex*, and *Surrey*.

a. 90 & 91. Two; found on the Sea-Shores, about 4 Miles on this Side *Weymouth*.

a. 92. From *Stoke*, *Somersetshire*.

a. 93. Found near *Wotton*, *Oxfordshire*,

a. 94. Found upon a Hill on the West-side of *Bath*. They are very numerous there.

a. 95. Spar form'd in the room of a Shell. Found near *Ailesbury*.

a. 95<sup>x</sup>. A *Vitriolick*, or *Sulphureo-Metallic* Body, in form of the Shell. N<sup>o</sup>. f. 608. in the *Catalogue of the English extraneous Fossils*. 'Twas dig'd up at ----- in the Estate of *Sir Cecil Bishop*, about a Mile from *Abbingdon*. 'Twas found about 50 Yards deep, along with other like Bodies, in Form of Shells, and  
other



others in Form of Sticks, or Parts of Trees, but of like vitriolic Constitution. These vitriolico-metallic Principles, in State of Solution, in Water, dissolved the Shell gradually, and concreted successively, in the same Manner and Form. There's something like this in the Solution of Iron, and Concretion of Copper, in a Spring in Hungary. See the Catalogue of the Foreign Native Fossils. And nothing is more common than Spar in Form of Shells; of which the precedent is an Instance, and there are many others in my Cabinet. Vitriol, and Spar, being in the same Water, passing the Strata, in which Shells are lodg'd, the Vitriol dissolves the Shells, the Water washes the dissolved Parts away, and precipitates Spar in their room, till this, having fill'd the Cavity, formerly fill'd by the Shell, of Course resembles the Shell, being moulded and cast in the Cavity where-out that Shell deserted. Where there happens to be no Spar, the Vitriol affixes any other Matter that it has dissolved, as Metal, and frequently also concretes it self, as in this present Instance, and many more that I have seen. See a Sparry Body, in Form of the very same Species of Shell, g. 9. *infra*.

a. 96. A grey Stone, form'd in a Bivalve, of that Kind called by Dr. Plot, *Hippocephaloides*. Found in digging for Marle, near Ailesbury. 'Tis observable, that the Shell being perish'd and gone, there are in the room of it many small Crystallizations of a yellow brassy Marcasite.

a. 97. Another *Hippocephaloides*, out of a Stratum 10 Foot deep, in a Stone-pit near Dinton-Mill, Bucks.

a. 98. Another, with Marcasite, crystalliz'd upon the Surface, in room of the Shell from the same Pit, at Dinton-Mill: Likewise I have observ'd, in room of the Shell, in the *Hippocephaloides* of Portland, Selenites crystallized; in manner not very unlike that of this Marcasite.

#### MUSCULI.

a. 99, 100, & 101. Three Pair of Muscles. Out of the Cliffs on the East side of the Creek, about a Mile above Weymouth-Bridge.

#### PHOLAS.

a. 102. A brown Flint, in which was the Shell of a Pholas, now perish'd; but the Flint has preserv'd the Impression, both inside and outside of that Shell. Gravel-pit, near Streatham, Surry.

#### *Concha anomala, seu incerti Generis.*

a. 103. Parts of a Bivalve, in its Texture striated a-cross, after the Manner of a *Pinna Marina*. Out of a Chalk-pit near Guildford, Surry.

a. 104. A Bivalve in Maum, a harder sort of Chalk, used chiefly for Lime. White-Down, near Wotton, Surry. This lay 25  
Foot

Foot deep; but the whole Bed, to the very Surface, is full of these Shells, and of *Pyrite*.

a. 105. *Whelpy-Hill*, near *Barkhamstead*, *Hertfordshire*.

a. 106. Part of a Shell, with the Texture of the *Pinna Marina*. Chalk-pit on *Barkhamstead Common*, *Hertfordshire*.

a. 107. Fragments of Shells; out of a Chalk-pit on *Detling-Hill*, within 2 or 3 Miles of *Maidstone*.

a. 108. Other Fragments of Shells, seeming to be of the same Kind; out of a Chalk-pit on *Boxley-Hill*.

a. 109. Shells, seeming to be Part of that from which the *Enetrochus* arises; from a very large Chalk-pit, above 50 Foot deep, near *Tongum*, betwixt *Guildford* and *Farnham*, in *Surry*. There were vast Numbers of Fragments of this sort of Shell in the Chalk; as also of the *Echini*, and several other Shells.

#### P A T E L L Æ.

b. 1. A flinty Peble. Found on a Hill betwixt *Adington* and *Croydon*, with either the Shell, or the Impression of a *Patella* in it.

b. 2. A *Patella*. From a Chalk-pit near *Epsom*.

b. 3, 4. These two Bodies, and the following (N<sup>o</sup> b. 5.) Mr. *Stone-street* judges to be *Patella*: I am in doubt of that. These two were found in a Chalk-pit by *Bushy*, about a Mile from *Watford*, *Hertfordshire*; where these Bodies are found in great Quantities.

b. 5. Out of a Chalk-pit near *Deptford*.

#### V E R M I C U L I.

b. 6. A *Vermiculus* adhering to part of the Shell of a conic *Echinus*. Out of a Chalk-pit, near *Croydon*.

b. 7. Part of a Shell of Texture like that of the *Pinna Marina*, with the Shell of a *Vermiculus*, and several other Shells of some kind of Bivalve, affix'd upon it. From a Chalk-pit, on *Whelpy-Hill*.

b. 8. A Cluster of *Vermiculi Marini*, very fine. Out of a Chalk-pit, near *Croydon*, *Surry*.

#### N A U T I L I.

c. 1. A *Nautilus Gracorum*, having a glittering brassy *Pyrites* adhering to it externally. 'Tis broke; and the Inside is lined with a Crust of a like *Pyrites*, striated a-cross, after the manner of the talky plated Spars. There are also Plates of *Pyrites*, striated in like manner, running cross the Cavity of the *Volutæ*, in room of the *Diaphragms* which are broken, and the Fragments lie dispersed in several places, being incorporated with the Mass of the *Pyrites*. Found in the great Clay-pit at *Richmond*, *Surry*.

c. 2. Three Joints of *Nautiloides*. Found near *Bath*.

## AMMONITÆ.

- c. 3. An Ammonites, from *Stoke, Somersetshire*.  
 c. 4. Ammonites. *Ibid.* c. 5. Another. *Ibid.*  
 c. 6. Ammonites. Found amongst Multitudes of others, in a vast Pit of *Maum*, used for Lime, at the bottom of *Box-hill*, near a Mile from *Darking*, in *Surrey*.  
 c. 7. A Segment of a *Cornu Ammonis*. Found amongst several others, in a Chalk-pit, at *Wotton*, three Miles beyond *Darking*, *Surrey*. They were much of one size, and about three Inches broad, but very tender. There were several other Shells with them.  
 c. 8. *Whitby, Yorkshire.* c. 9. *Pyrton-Passage, Gloucestershire.*  
 c. 10. *Whitby Alum-Mines.*  
 c. 11. Ammonites. *Stoke, Somersetshire.*  
 c. 12. Ammonites. *Keinsham.*  
 c. 13. Mr. *Squire's Alum-Mines*, at *Blackhead*, near *Whitby, Yorkshire.*  
 c. 14. Ammonites, with Fragments of the Shell upon it. *Whitby Alum-Mines.*  
 c. 15. *Stoke, Somersetshire.* c. 16. *Weymouth.*  
 c. 17. An Impression of an Ammonites upon a flinty Pebble, found near *Shooters-Hill, Kent.*  
 c. 18. A very small *Cornu Ammonis*, found in the middle of a Pebble, near *Bromley*, in *Kent.*  
 c. 19. A Segment of a *Cornu Ammonis*, found near *Beer, Devonshire.*  
 c. 20. A Segment of the two contiguous Shells of the inner part of the *Volutæ* of a large Ammonites. There are Ammonitæ of this Species found here vastly big. Mr. *Hutchinson* sent, in this Parcel, a Segment of a *Voluta* that was eighteen Inches about. *Pyrton-Passage.*  
 c. 21. Part of the outside Shell of another, very crass. *Pyrton-Passage.*  
 c. 22. Three Bodies, round, and environ'd with Ridges and Furrows alternately. There were found various Shells, and Sharks Teeth, along with these. *Folkston-Cliffs, Kent.* There are of these in the *Catalogue of the English Extraneous Fossils*, N<sup>o</sup> p. 156, 157, 158.

## COCHLEÆ.

- c. 23. A River Snail-Shell; and several turbinated Stones, form'd in like Shells, variously compress'd. From the *Marble-Quarry*, four or five Miles from *Petworth, Sussex.*  
 c. 24. A Stone cast in a turbinated Shell. Out of the *North-Chapel Marble, Sussex.*  
 [A.] c. 24<sup>x</sup>. A River Snail-shell decay'd, and shewing Spar within. Found near *Camberwell*, with N<sup>o</sup> c. 36. *infra.*  
 c. 25. *Cochlites*. Found near *Milesbury.*

c. 26. A Stone form'd in a turbinated Shell, found in the Highway at the hither end of *Ailesbury Town*.

c. 27. A turbinated Shell, from the great Clay-pit, near *Richmond*.

c. 28. A turbinated Shell, found along with that in the *English Catalogue*, N<sup>o</sup> c. 124<sup>x</sup>. in sinking a Well at *Pinner-Hill*, *Midlesex*.

c. 29. Great Clay-pit. *Richmond, Surrey*.

#### TROCHI.

c. 30. Mr. *Hutchinson*. c. 31. *Shotover-Hill*, near *Oxford*.

c. 32. *Trochus*, *Bridport, Dorsetshire*. The Body being broke; the interior Frame of it is laid open. The Shell is perish'd, and succeeded by a Spar.

#### RHOMBI.

c. 33. Four Rhomboid Shells, found in digging a Ditch, near *Biffeter, Oxfordshire*.

c. 34. Found with the precedent Rhomboides, near *Biffeter*.

#### BUCCINA.

c. 35. A very elegant Buccinum, found amongst great Variety of Shells, Sharks Teeth, and other marine Bodies, about sixty Foot deep, in the great Clay-pit at *Richmond, Surrey*.

c. 36. A Buccinum, found, in digging a Ditch, at the South-End of *Camberwell, Surrey*. There were found, with this, several other kinds of Shells, of the same sorts with those found on *Blackheath*, also near *Woolwich*; and at *Stifford* in *Effex*.

c. 37. A Shell of the same Species with those dug up near *Woolwich*, e. 77. *English Catalogue*, Part 2. This was dug up at *Sundridge*, near *Bromley*.

c. 38. A Buccinum, of the same Species with those dug up near *Woolwich*, e. 112. *Catalogue of the English Fossils*, Part 2. Found with the former at *Sundridge*.

c. 39. A turbinated Shell, found, about two Foot deep, in a very high Ground, near that call'd *Cæsar's Camp*, three Miles from *Bromley, Kent*. 'Tis of the same Species with those found at *Woolwich*. *English Catalogue*, e. 77.

c. 40. A Stone, red, form'd in a turbinated Shell, found, with *Entrochi*, at *Bothel*, in *Cumberland*, in a Bank on the high Road side, leading from *Carlisle* to *Cockermouth*.

c. 41. A Pyrites, found in a turbinated Shell; from the great Clay-pit, near *Richmond*.

#### *Echini Spatagi Cordiformes.*

d. 1. *Echinites Cord*. The greatest part of it was immersed in a large Flint; and almost cover'd by it. Found by *Barkhamstead*.

d. 2. *Echinites Cord*. much sulcated, or chop'd. *Downs* near *Carshalton, Surrey*.



d. 3. Echinites Cordiformis. Found in a Gravel-pit near *Croydon, Surrey*. This Shell seems to have been broken on one side; and the flinty Matter to have enter'd at the Breach, where likewise a great Appendage of Flint was form'd.

d. 4. Impression of an Echin. Spat. Cord. on Flint. *Amerston-Common, Buckinghamshire*.

d. 5. A cordated Echinite. Found by *Raisbury* in *Buckinghamshire*, near *Stains*.

d. 6. Another, found in a Gravel-pit on the Backside of *Trinity-Chapel*, at the end of *Bondstreet, Piccadilly*. There seems to have been the Base of a *Balanus* on the inside of the Echinus in which this Body was formed.

d. 7. Echinites Cordiformis. Found near *Barkhamstead*.

d. 8. A cordated Echinite. *Croydon*.

d. 9. A Flint form'd in the Shell of a cordated Echinus Spatagus. By the Impressions, apparent on the Stone, 'tis evident the Shell was compress'd by some external Force before the Stone had attain'd its present Hardness. Found near *Croydon, Surrey*.

*Echini Spat. Galeati.*

d. 10. A galeated Echinus, the largest I ever saw. Out of a Chalk-pit near *Sutton, in Surrey*.

d. 11. A very fair galeated Echinites, found near *Malden*.

d. 11<sup>x</sup>. A galeated Echinite, found on the Top of an high Hill, in Mr. *William Collins's* Estate, in the Parish of *Exminster*, three Miles from *Exeter*.

d. 12. A galeated Echinite, of a Species somewhat differing from the common. Found in a Field near *Little-Hallingbury* in *Essex*; not far from *Bishop-Stratford*.

d. 13. Echinites galeatus. Found near *Barkhamstead*.

d. 14. A galeated Echinites, much compress'd; found near *Beer* in *Devonshire*. This was the first sign of an Impression or Shell I met with from the *Land's-End* to this Place; I not finding the least Vestigium of any Fossil Shell in all *Cornwall*.

d. 15. Echinites galeatus, much compress'd. *Carshalton, Surrey*.

d. 16. A galeated Echinite, consisting of a grey Flint, very perfect and fair. Found near *Marlow, Buckinghamshire*.

d. 17. A galeated Echinite. Found near *Adgcomb-House*, near *Croydon, Surrey*.

d. 18. Another, more copp'd, or tending to a conoid Shape. *Downs* near *Carshalton, Surrey*. In this the Sutures or Partitions of the Plates of the Shell are finely exhibited.

d. 19. Another, taller. *Ibid.* d. 20. A galeated Echinite. *Ibid.*

d. 21. Echinites galeatus. *Ibid.*

d. 22. A dark brown Flint, form'd in the Shell of a galeated Echinus Spatagus. Found near *Carshalton, in Surrey*. It represents the whole Inside of the empty Shell very exactly.

d. 23. Another like Flint, form'd in the Shell of an Echinus of the same Genus, but of a somewhat different Species. From the



same Place. This exhibits the Impression of the lower part of the Shell; but has a Cavity at the Top, form'd by the Fish, or some part of it, which happen'd to be remaining in this Shell when the flinty Matter enter'd.

d. 24. An Echinite found on the Shores under *Handle-Cliff*, near *Hurst-Beach*, betwixt *Christ-Church* and *Limington*.

d. 25. Echinites galeatus. *White-Down*, near *Wotton*, *Surrey*.

d. 26. An Echinite, found by the Road near *Kennington-Green*, by *Lambeth*. There are some Remains of the denser and firmer Parts of the Shell yet adhering to the Surface of the Stone.

*Echini Spat. Conoides, seu Pileati.*

d. 27. Echinus Spat. Pileiformis, seu Conoides. Found in the same Pit where the Oyster-shell, a. 22. was found, at *Catgrove*, near *Reading*.

d. 28. A conic Echinus. *Croydon*.

d. 29. Echinus pileatus, out of a Chalk-pit at the very Top of *Whelpley-Hill*, near *Barkhamstead*, *Hertfordshire*. This Hill is of a considerable Height.

d. 30. An Echinus pileatus. From the great Chalk-pit near *Chiselhurst*, *Kent*. There is a Mass of Flint adhering to it externally.

d. 31. A conic Echinite, loose, in a Flint. Found near *Upminster*, *Essex*.

d. 32. Echinites pileatus. Found among several others, near *Reading*, in *Berkshire*.

d. 33. A conic flinty Echinite, found in the great Gravel-pit on the East-side of *Hyde-Park*, without. 'Twas found, in the midst of a large Flint, environ'd on every side with flinty Matter; and yet the Shell was perish'd, and gone. There was an Impression of the Outside of the Shell upon the environing Flint. Water will insinuate itself into Flints through certain imperceptible Cracks. This is most evident in those Flints that have Dendritæ in them. By Water thus insinuating itself, and carrying Salts, the Shells in Flints are sometimes dissolv'd and destroy'd.

d. 34. Echinites Conoides. Found near *Sanderstead*, *Surrey*.

d. 35. A small Echinite, found inclosed near the Center of a pretty large Flint; near *Croydon*, *Surrey*.

*Echini Ovarij.*

d. 36. An Echinus Ovarius. Chalk-pit at the End of *Deptford*.

d. 37. An Echinus Ovarius, in black Flint. Found near *Adcomb-House*.

d. 38. An Echinus Ovarius. Found, in digging of a Ditch, near *Bisseter*, *Oxfordshire*.

d. 39. An Echinites, or Flint, cast in the Shell of an Echinus Ovarius; in which are, I think, Impressions of the Teeth. Found near the Road a little on this side *Warford*, *Hertfordshire*.

d.40. An Echinites Ovar. in a brown Flint, in which is a fair Impression of the Outside of the Shell. Gravel-pit, on *Egham-Heath, Berkshire*.

d.41. An Impression of two Plates of an Echinus Ovarius on a Flint. Found in the great Gravel-pit near *Nibbs-Pond, St. Giles's*.

d.42. Impression of an Echin. Ovar. on a flinty Pebble. *Peckham, Surrey*.

d.43. Impressions of Plates of the Shell, and Spinæ, of Echini; out of a Gravel-pit near *Cassiobury-Park, Hertfordshire*. The Flints hereabouts have commonly like Impressions.

d.44. An Impression of the Spinæ of an Echin. Ovar. in a grey Flint. Found in Gravel, near *Hatfield, Hertfordshire*.

d.45. Lapis Judaicus. The clavated Spike of an Echinus; part of it is immeried in a black Flint. Found in a Chalk-pit, near *Guildford, in Surrey*.

d.46. A jointed Body, of like kind with those mention'd in the second Part of the *Catalogue of the English Fossils*, N<sup>o</sup> i. 1, & seq. Found in a Chalk-pit, beyond *Croydon*, near *Smitham-Bottom*.

#### APPENDIX 1. *Entrochi*.

\*d.47. A concavo-convex pentangular Plate, part of a Shell, seeming to be of that sort that belongs to the Entrochus; and supposed by Dr. *Beaumont*, and those who call this Body a *Rock-Plant*, to be the Bulb or Root from which it arises. Whereas this Entrochus is only an Appendage, or Train to that Shell. From a Chalk-pit on *Epsum-Common*.

\*d.48. Another, from the same Chalk-pit.

\*d.49. An Entrochus, from *Lassington*, in *Gloucestershire*. Found with the Star-Stones.

\*d.49†. Entrochi, found (on a Bank in the High-Road-side leading from *Carlisle* to *Cockermouth*) at *Bothel*, in *Cumberland*.

\*d.50, & 51. Entrochi, from *Moreland*, in *Westmorland*. Found upon the Banks of the River, at the upper end of the Town.

\*d.52. Entrochi, found at about a Mile and half's distance from the River, near *King's-Meaburn*, *Westmorland*.

\*d.53. Entrochi, out of a Lime-stone Ground at *Bothel*, in *Cumberland*.

\*d.54, & 55. Entrochi. Lead-Mines, *Crofsfells*, *Cumberland*.

\*d.56, 57. Entrochi, out of the Brook call'd the *Fairy-stone-Brook*, at *Strickland-head*, *Westmorland*.

#### APPENDIX 2. *Entrocho-Asteria*.

\*d.58. Entrocho-Asteriæ, from a Brick Clay-pit, on the South-side of *Islington*.

\*d.59, 60. Entrocho-Asteriæ, found in the Tile Clay-pit behind *Trinity-Chapel*, at the end of *Bondstreet*, *St. James's*.

\*d.61. An Impression of an Entrocho-Asteria on a Flint. *New-Crofs*, near *Deptford*.

APPENDIX 3. *Asteria.*

\* d. 62. An *Asteria*, found near the Top of *Breedon*, an high Hill, in *Worcestershire*.

\* d. 63. *Asteriæ*, from a Brook in the Forest of *Blackmoor*, near *Melbury*, *Somersetshire*.

\* d. 64. *Asteriæ*, found in a Gullet in the Street in the lower part of *Leppington-Town*, *Yorkshire*.

\* d. 65. *Asteriæ*, found, in great Numbers, in a Brook, at *Leviston*, near *Sherburn*, *Gloucestershire*.

\* d. 66. Two Joints of an *Asteria* in a black Flint. From a Chalk-pit near *Guildford*, *Surrey*. Dr. *Sheppard*.

\* d. 67. A flinty Pebble, with the Impression of a short Column of an *Asteria* on it. Found near *Bromley-Church*, *Kent*.

*Partes Piscium.*

e. 1. Part of a Bone found in a Quarry upon *Coln-Breach*, in *Coln St. Allens-Fields*, *Gloucestershire*.

e. 2. A large Vertebra, five Inches over, one Inch and  $\frac{1}{2}$  high, found in a black Grit-stone, forty Foot deep, on occasion of trying for Coal, in a Ground call'd *Richmonds*, near *Whiteings-Water*, in *Melbury-Abbas* Parish, near *Shafton*, in the County of *Dorset*. There were other Vertebrae found with it; as also Sea-shells.

e. 3. A large Vertebra, found two Foot deep near *Ashley*, *Northamptonshire*.

e. 4, 5. Part of two Vertebres of some Fish. Found about forty Foot deep in the great Chalk-pit at the West-end of *Greenhithe*.

e. 6. A Vertebre, small, found in Marl, in *Bewly-Parish*, by *Lymington*, *Hampshire*.

e. 7. A Body seeming to be the Head of a small Bone. Chalk-pit, by *Deptford*.

e. 8. A Piece of the upper part of the Skull of some kind of Fish, found, with *Bufo*nitæ, in a Quarry a Mile from *Fairford*, *Gloucestershire*.

e. 9. Three boney Substances. Found near *Witney*, *Oxfordshire*.

e. 10. A *Glossopetra*, or Shark's-Tooth, found, among many others, and small Fragments of Bones, as also Oyster-shells, in a Bed of Sand, at *Catgrove*, near *Reading*.

e. 11. A small *Glossopetra*, digged up, with several others, in a Brick Clay-pit, near *Islington*, *Middlesex*.

e. 12. A Shark's-Tooth, out of a Brick Clay-pit, on the Top of *Shooters-Hill*, in *Kent*.

e. 13. Four Teeth. *Witney*.

e. 14. A Tooth, lodg'd in a brown Stone. From a Stone-pit, near *Witney*, *Oxfordshire*.

e. 15. A Body of a dark brown Colour somewhat inflected; in some parts striated, in others studded on the Surface; with a medullar

dullar Substance, of a very pale brown Colour, running length-ways of it; it lies in Stone. Found in a Quarry near *Stonesfield, Oxfordshire*.

e. 16. *Witney*.

e. 17. *Witney*.

e. 18. A Tooth, conic, somewhat inflected; found, in Marl, in *Bewley-Parish, by Limington, Hampshire*.

e. 19. *Witney*.

e. 20. *Bufonitæ*, or Teeth of the *Lupus Marinus*; found, in a slatey Stone, in a Quarry call'd *Honeycomb-Layes*, in *Mazy-Hampton Parish, near Fairford, in Gloucestershire*. There are like Bodies found also in a Quarry in *Fairford-Fields*, about half a Mile North-East of the Town; and at *Stunsfield* in *Oxfordshire*, in a Stone-Quarry. Mr. *Fettyplace* Bellers.

e. 21. *Stunsfield-Quarry, Oxfordshire*.

e. 22. *Silicuastra*, of various Figures, and Sizes. *Stunsfield-Quarry, Oxfordshire*. As these Bodies seem to have serv'd for the Coverture or Paving of the Mouth of some kind of Fish, so some of them appear to have lain in the midst: others to the sides; and they are so form'd, that those that have lain to the right side, have the Angle rounded off on that side; as the other, *Antagonists*, have it rounded off the left; the two Opposites usually pairing. Some of them appear to be worn by grinding or chewing; and one or two, by the agitation of the Sea. Of these last, I have seen several, tho' they are not near so common as the others.

e. 23. *Witney*.

e. 24. One rhomboidal boney Scale of the Needle-Fish, out of *Stunsfield-Quarry*, two Miles from *Woodstock*. The Mats off which this was broke, *Thomas Wells*, the Quarry-Man, assured me was flat, cover'd over with Scales, and above three Foot long.

e. 25, 26. Coal-slate, with Impressions, which seem to be of the Scales of some Fish\*. It lay about forty Foot deep, just over the Bed of Coal, in an old deserted Coal-pit at *Merackson*, about three Miles from *Tenby*.

e. 27. A round Bone, with a Hollow on one side, and a Spine arising out of it, as usual, either in the Thornback, or some other Fishes of that kind; immersed in a small Peble. Found in Gravel near *Croydon*.

e. 28. A boney or horney Body, slender, round, long; lying in an hard Stone, in which are Impressions of various Shells. *Witney*.

#### *Partes Quadrupedum.*

f. 1. A very extraordinary boney Body; dug up with the Elephant's Tusk mention'd in *English Catalogue*, Part. 2. o. 2. at *Bowden Parva*, in *Northamptonshire*. Sent by Mr. *Morton*, who imagines it to be part of the Proboscis of that Elephant.

\* I much doubt whether this be not rather to be referred to the Class of Vegetables, p. 22, infra.

f. 2. Part of the Grinder-Tooth of an Elephant, digged up near the same Place where the Elephant's Tusk, *English Catalogue*, Part 2. N<sup>o</sup> 0. 2. was digged up. *Bowden, Northamptonshire.*

*Shells, and other Bodies, in Stone.*

g. 1. A Mass of brown Stone, that has lain exposed to the Rain and Weather, by means of which it is much worn, and the Sand beat away, so as to discover very numerous Sea-shells within, chiefly of the two kinds of *Conchæ anomia*. Taken off the Top of a loose Wall, in *Bristol Road*, near *Bath*.

g. 2. Great Numbers of the *Concha anomia striata*, in a Red-stone, part of a Stratum nine Foot deep, out of a Quarry at *Womandham*, in *Leicestershire*, upon the Borders of *Rutland*. Some of these, being broken, shew a white transparent crystalliz'd Spar in the Cavities of them.

g. 3. Several *Conchæ anomia*, in Stone. *Lansdown*, near *Bath*.

g. 4. A fine grey Sand, thick set with Species of small Bivalves, part of a Stratum of a Cliff. Midway betwixt *Limington* and *Christ-Church*, *Hampshire*.

g. 5. Small Shells, in great Numbers, all near of the same Size and Growth, seeming to be Vernal, and young Shells, of some kind of large Bivalve, found on the Shores, on the East-side of a Creek, about a Mile above *Weymouth Bridge*.

g. 6. Stone, with various Shells in it. *Pyrton-Passage*.

g. 7. A Mass of marley Clay, now dry'd and harden'd, from *Sundridge*, near *Bromley*, in *Kent*, so thick set with Shells, that it seems to have more testaceous than earthy Matter in it. They lay from near the Surface to twenty Foot deep. They use this Earth, with the Shells in it, as Marl, for Manure. In the Sand and Gravel-pits, at both ends of *Woolwich*, and betwixt that Town and *Charlton*, there are Strata in which, I think, these Shells lie thicker. Indeed so thick in some places, that there seems to be very little terrestrial Matter interposed. 'Tis remarkable that they are of the same sorts with these; as are likewise those found at *Stifford* in *Essex*, and in several other Parts of that County, *Kent*, and *Surrey*.

g. 8. Stone of a dusky brown Colour, very thick set with Bivalves. From a Quarry near *Clay-Cross*, in the Parish of *North-Wingfield*, in *Scarfsdale*, *Derbyshire*.

g. 9. A sparry Body exactly in form of one Valve of one of the knobb'd Bivalves; being form'd in room of one of the said Valves, that being first corroded, and carry'd off; struck out of a piece of *Ludus Helmentij*. Found about a Mile above *Weymouth-Bridge*.

g. 10. Part of a Stratum of Stone of a dark grey Colour, holding Shells, and small Fragments of other marine Bodies in it. Found in Mr. *Marrior's* Lead-Mines at the *Howe*, near *Grinton*, in *Yorkshire*.

g. 11. A Mass of Stone thick set with turbinated Shells, seeming to be of River-Snails, of that kind call'd by Dr. *Lister* *Cochlea vivipara*.



*vivipara*. Dug out of a Marl-pit in *Sutton-Valence*. Sent by Dr. *Hatley*.

g. 12. A Mass of brown Stone, beat from the Strata of the Cliffs, and worn by being shuffled on the Shores to and again by the Water; having great Numbers of Shells in it, both bivalve and turbinated: as also one *Dentale*, found loose upon the Shore, mid-way betwixt *Limington* and *Christ-Church*.

g. 13. A Mass of black Stone, with Shells of the very same Kind in it; found upon the Shore not far from the former.

g. 14. A blackish Marl, now dry'd, and harden'd, with Shells also of the same Kinds in it; from the same Place.

g. 15. A very hard Stone, of a reddish Colour, having in it great Numbers of that sort of River-Shell which Dr. *Lister* calls *Cochlea vivipara fasciata fluviatilis*, N<sup>o</sup> 26. *Litt. Hist. Conchyl. fluv.* which Species is now found living in the *Thames*, and some other Rivers of *England*. There are two Pieces of this Stone, which were broke from, and so tally to each other. From the same Place.

g. 15<sup>x</sup>. The same sort of Stone, found on the Shore under *Hor-dell-Cliffs*, *Hampshire*. 'Twas beat, by Storms, and Tides, out of those Cliffs: and shuffled and worn, on those Shores, so as to shew the Shells, in it, in various Sections in a very beautiful manner.

g. 16. A dusky grey Stone, with Shells of the same Kind, and others, in it. From the same Place.

g. 16<sup>x</sup>. Another, having in it several of the *Cochlea vivipara*, several small *Buccina*, and a compress'd *Cochlea*, seeming to be all River-Shells. From the same Place.

g. 17. A brown earthy Mass, with numerous Shells in it, out of the Hollow of a large turbinated Shell. Found in the Cliffs beyond *Limington*.

g. 17<sup>x</sup>. Stone so thick set with Shells, that the testaceous seems to exceed the arenaceous Matter of the Mass. From *Bossal*, *Yorkshire*.

g. 18. A black Slate, holding in it great Numbers of *Spinula* of an *Echinus spatagus*. From the Top of the Mountain *Skiddau*, in *Cumberland*; where like Slate is found in vast Quantities.

g. 18<sup>x</sup>. Shells of some kind of *Tellina*, in black Slate; found with great Numbers of Ferns, and other Plants, in a Coal-pit at *Houghton le Spring*, in the *Bishoprick of Durham*.

g. 19. *Chert*, a sort of flinty Stone, with a grey hard Stone joining it. They together constitute a Stratum, and meet in near a Line, by that means dividing it into two Parts. This Stratum over-lies the Lead-Works. There are Impressions of Shells in it. In Mr. *Marriot's* Lead-Mines at the *Howe*, near *Grinton*, *Yorkshire*.

g. 20. A Piece of Stone, with Ova of Fishes, and Fragments of Shells in it. *Northleach*, *Gloucestershire*.

g. 21, 22, 23, 24. Stone, corroded by Marine Steams. It hath in it Shells, and *Entrochi*, that have escaped, and remain intire. So that these abide those Steams better than the Stone; which yet

I find to be harder than the common *Genoeſe* Marble. From the Cliffs of *Caldy-Island, Wales*.

g. 25. From the ſame Cliffs. 'Tis cut, and part of it poliſh'd; in doing which, on this, and ſeveral others, Judgment was made of the Hardneſs of this Stone.

g. 26. From the ſame Cliffs. This, beſides Shells, *Entrochi*, and other Bodies, has in it fair Pieces of *Corallina reticulata*, or *Planta Marina retiformis*, *Joh. Bauhini* & *Cluſij*, commonly call'd the *Sea-Fan*.

g. 27. This has in it Part of a *Sea-Fan*, of an inflected Body, ſeeming to be an *Entrochus*; and a Ray of one Species of *Engliſh* Star-Fiſh, with *Cirrhi*, very conſpicuous, on one ſide. From the ſame Cliffs.

g. 28. Black Marble, vein'd with white Spar. 'Tis full of *Entrochi*. One is very large, broke, and parted; and a Vein of Spar interſects or paſſes betwixt the Pieces or Parts. This ſhews that the Stone was crack'd and broke; and that that Spar was introduced into the Fiſſures ſince the Compilation of the Stratum of Marble; which may ſerve to give a Hint of the Origin of at leaſt one ſort of the Veins in Stone and Marble. From *Caldy-Island, Wales*.

g. 29. From the Cliffs of *Caldy-Island*.

g. 30. *Entrochi*, in a ſoft Stone, grey, and red. *Caldy-Island*.

g. 31. A Stone, with vaſt Numbers of *Entrochi* and *Bivalves* in it; found in the Rubble of a Lead-Mine, in *Charterhouſe* Liberty, *Mendip*.

g. 32. *Aſteria*, very fair, in Stone. *Pyrton-Paſſage*.

g. 33. *Aſteria*, in a very fine hard Stone. *Pyrton-Paſſage*.

g. 34. A Maſs of Stone, with Shells and *Aſteria* in it. *Pyrton-Paſſage*.

g. 35. A duſky grey Stone, having in it Shells, Spikes of *Echini mar.* and ſeveral *Entrocho-Aſteria*. *Pyrton-Paſſage*.

g. 36. A Maſs of yellow ſhining mineral Matter, much like that of the *Pyrites*, with numerous Shells, *Aſteria*, and Joints of the Wires of the *Aſteria* in it; all of a yellow, ſhining, braſs-like Complexion. *Pyrton-Paſſage*.

#### *Parts of VEGETABLES, digg'd up out of the Earth.*

b. 1. A Piece of an Oak that was 31 Foot in Length, and 7 in Girt, near the Root. There were Stumps of the Root on, about 2 Foot in Length, and of the Branches to 5 or 6 Foot. Found, about 3 Foot deep, in *Sunning-Hill-Park*, 4 Miles from *Windſor*. They are very numerous, both here, and in the neighbouring Peat-Moors. In ſome they find Hazle-Shrubs, and Nuts. They ſplit the Oaks, and uſe them for Pales; in which they abide the Weather and laſt longer than the common Oak.

b. 2. Wood, broke off a Stump of a Tree that was in a growing Poſture, erect, and the Roots extended horizontally in every Direction. There were ſome hundreds in the like Poſture, ſtand-

ing about a Foot above the Surface. They were much perish'd and rotted. I saw no Mark of an Ax, or other Tool, upon any, nor were there any of the Bodies of the Trees remaining. They stood all in a Peat-Marsh that was very boggy. They were all of a sort; and I took them to be Firs. Three Miles from *Llanedlloes*, in *Montgomeryshire*, betwixt that Town and *Eskergalid-Mines*. This Marsh, or Bog, is at the Top of a high Mountain.

*h. 3.* A Bit of Wood, saturated with Bitumen; from *Honeycomb-Lays*, a great Quarry in *Mazy-Hampton* Parish, *Gloucestershire*.

*h. 4.* A grey stoney Mass, part of a very large one, that had in it what appear'd very much like the Branches of a Tree very much rotted. There were in the same Mass great Numbers of Sea-Shells, both Bivalves, and turbinated. There appear'd, in various Parts of it, a talky Spar, grey, with a Cast of yellow. There were Veins of it likewise diffused through the Wood. Found upon the Shores of the Creek, about half a Mile above *Weymouth-Bridge*. In a Stratum of hard Stone, in a Quarry near *Bridport*, *Dorsetshire*. I likewise observ'd Wood, and Sea-Shells.

*h. 5.* A Piece of Wood, out of the same Stone.

*h. 6.* A brown friable Substance, which Mr. *Player* takes to be Wood. There is a Vein of white Spar in it. Out of a Quarry near *Stoke*, *Somersetshire*.

*h. 7.* A Body with the appearance of Wood, but having in it Veins, or rather Diaphragms of Spar; from *Honeycomb-Lays*, a great Quarry in *Mazy-Hampton* Parish, *Gloucestershire*.

*h. 8.* Part of a stoney Body, of a Cylindric Form, somewhat resembling Part of a Branch of a Tree. In the Middle is a white Substance, of somewhat harder Consistence than that of the compactest Chalk. This answers to the Pith, and is surrounded with numerous thin Coats, compos'd of a Matter more hard and stoney, of a brown Colour, and not unaptly resembling some Wood. Dug up in the great Tile Clay-pit, near *Richmond*, *Surrey*.

*h. 9.* Petrify'd Wood, of a deep brown Colour, near black; and having a Vein of a very pale or yellowish brown talky Spar running length-ways of it. This Body is very hard, and ponderous; but has much of the Grain of Wood. 'Twas given me by Monsieur *Misson*, who broke it off the Trunk of a Tree, petrify'd, and of the same Constitution and Colour throughout; in Length about 14 Feet, in Diameter above a Foot at one End, tapering, and somewhat less at the other, where there were some small Remains of Branches. It lay on the Shore, near *Harwich*, underneath the Cliff, out of which doubtless it had been beaten by the Agitation of the Sea. Sir *Anthony Dean* saw the Piece that is polish'd, [*h. 10.*] as also the Tree under the Cliff; and attests this Account. When he saw the Tree, it was yet actually lying in the Cliff: but a great part of it uncover'd and bare. He judg'd by the Shape that 'twas a Tree. This was in the Year 1666.

*h. 10.* A Piece of the same Wood, polish'd. 'Tis not very hard.

*h. 11.*

b. 11. A Body, having very much of the Grain and Appearance of Oak; but is ponderous, and much saturated with the Matter of the *Pyrites*. From the Cliffs of *Sheppey-Island*.

b. 12. Suppos'd to be petrify'd Wood. Found, near the Sea, in a Sinus of *Maidstone River, Kent*.

b. 13. A Body, appearing like Wood petrify'd. Out of a Gravel-pit near *Islington, Middlesex*. Upon tryal, for the polishing of it, it proves harder than *Porphyry*.

b. 14. A Body resembling Wood, but hard and stoney. Found in a Gravel-pit, on a Hill near *Kingslou* upon *Thames*, South-East of the Town.

b. 15. A Body suppos'd to be Wood petrify'd. Found in a Gravel-pit on *Hampstead-Heath*.

b. 16. A Body suppos'd to be Wood petrify'd. It lay in a Bed of Sand, 15 Foot deep, on *Amerfon-Common, Buckinghamshire*.

b. 17. A Piece of grey Stone, part of a Stratum, lying above the Coal, in the Pits near *Kirthlygear, Wales*, having in it an *Equisetum palustre*. In the same Stone are found various Kinds of Fern, and particularly the *Osmunda Reg.*

b. 18, 19. Grey Stone, having in it Sprigs of an *English* Plant, viz. *Muscus Clavatus Foliis cupressi*, C. B. & Gerh. Out of the Coal-pits of *Houghton*, in the *Bishoprick of Durham*.

b. 20. Part of an Iron-stone Nodule, having upon it Leaves, and Impressions of the Fern-kind, particularly the common Female-Fern, and *Osmunda regalis*; from a Coal-pit near *Little-Dean*, in the *Forest of Dean, Gloucestershire*. These Bodies are of the same sort with those call'd in the North *Cats-Heads*. These here are of various Sizes, from 3 Inches over, to 6 or 7; and generally of a flattish Shape. They lie all flat-ways, in the same Stratum, single, in the same horizontal Plane, and not one upon another. This Stratum is of Earth, as I remember, of a rust Colour; and 2 or 3 Foot thick. It lies immediately above the Stratum of Coal, under a Stratum of Stone, that was, in this Pit, solid, though, in some of the rest, 'twas broken, and rubley. These Bodies lie about 12 or 14 Foot below the Surface.

b. 21. Part of another, from the same Stratum, but from another Pit: This Stratum being found much at the same Depth in all the Pits of this Gang. There are, in this, Fern of three Kinds; of which the Leaves of two are preserv'd in Substance, by the Intrusion of mineral Matter. But the third Kind, both in this, and all the other Nodules that I broke, was found in Form of a fine dusky brown Powder; after having made Impressions, of both its Surfaces, on the two opposite contiguous Parts of the Stone.

b. 22. Part of the Powder of those Leaves, out of the foregoing Nodule.

b. 23. Sir *George Wheeler*, who sent this from the Coal-pits of *Lough-ton*, takes it for a *Dryopteris*. But it seems to me to be one of the *American* Female-Ferns.

b. 24.



*h. 24.* Sent, by the same Gentleman, from the same Pits, with the Title of *Frumenti spica*. It seems to me like the top Branch of some Pine.

*h. 25, 26.* These are parted from each other, and exhibit some Fruit, probably of the Pine-kind. Out of the same Coal-pits.

*h. 27.* Mr. Miller takes this for the exterior Skin of a young vernal Pine Cone. Also from *Houghton* Coal-Pits.

*h. 28.* Out of the Duke of *Somerset's* vast Coal-Work, at *Whorlton-Moor, Northumberland*. Found about 5 Foot above the Coal. Mr. Miller will have this to have the Aspect of a *Virginia* Maize, or *Indian* Wheat, tender, young, vernal, and not ripen'd. The Hazle Nuts, digg'd up in *England*, are rarely such as appear to be ripen'd. The Pine Cone are in their vernal State; as are all the Vegetables, and the young Shells. The Deluge came on, and a stop was put to their further Growth, at the End of *May*. Vid. *Nat. Hist. of the Earth*, Part 3. Sect. 2. Consect. 5.

*h. 29.* Found together with the precedent, in a Bed of grey Shiver.

*h. 30.* Found in a Coal-pit, at *Lanelthy, Wales*.

*h. 31.* A Body composed of a grey sparry Stone, infected with a brown; thick set with large Tubercles, like some I have observ'd upon a Species of *Tithymal*. 'Tis flat, and appears to have been compress'd by some external Agent, the Tubercles standing thicker, and being more prominent on the Sides than on the Flats. Found, as these Bodies here usually are, in a Bed of Shiver, 5 Fathom deep, at *Lanelthy, Wales*.

*h. 32.* Another, found with the precedent, not different, only 'tis less. This hath the *Pith*. (*Conf. h. 41. infra.*)

*h. 33.* A Body compos'd of a coarse Spar, grey, with small Sparks in it very glittering. 'Tis oblong, and of a compress'd Figure, being 2 Inches and  $\frac{1}{4}$  in Diameter, one way, and only 1 Inch and  $\frac{1}{4}$  the other. It belongs to the same Class with those in the *Catalogue of the English Fossils*, Part 2. p. 266. q. 29, 30, 30<sup>x</sup>. and has little Holes, with *Papillæ* in them, placed in a quincunx Order, as those have. This was lodg'd in a Stratum of Stone, at *Stubbing-Edge*, near *Ashover*, in *Scarsdale, Derbyshire*.

*h. 34.* Another like Body, but near approaching a Cylindric Form, being 3 Inches in Diameter one way, and 2 and  $\frac{1}{4}$  the other. 'Twas five Foot long, taken forth of a Stratum of a Quarry near *Higham*, in *Scarsdale, Derbyshire*. 'Tis compos'd of a coarse Spar, of a dusky brown Colour, with a Cast of red, having numerous small glittering Sparks in it. It has something, analogous to a *Pith*, (*Confer. h. 41. infra.*) passing it length-ways; tho' not in the middle of the Cylinder, but somewhat verging towards one Side: as also *Papillæ*, or Studs set in a Quincunx Order. The *Arbor Lavendulæ Foliis* hath Studs, like these, and set in the same Quincunx Order. These, in this Plant, are only the *Vestigia*, or Marks left by the fallen Leaves.



*b. 35.* A Body, oblong, somewhat bent, and flattened, with a Ridge running on one side, and a Creest or *Sinus* all along by it. 'Tis compos'd of a sparry Stone, grey, vein'd with blackish. It has all over the Surface, *Papillæ*, or Studs, flattish, about the Bigness of a Vetch, each having [where the Body is not defaced] a small Hollow in the middle, and being set or placed in a Cavity just big enough to contain the Studs. They are ranged pretty regularly in a Quincunx Order. This seems to have been externally crusted over with a thin black *Cortex*. How long this was, originally, I cannot tell; but I broke near 2 Foot off this, creested, and studded as this is: and of the same Colour, and Constitution. *Lanelthy-Coalery, Wales.*

*b. 36.* Another, of a greyish, brown, sparry Stone, cover'd with a black Crust, very glossy and shining; and having a *Pith*, attending the *Sinus*, much as in that. *Lanelthy.*

*b. 37.* A Piece of the precedent, thinn'd, or flattened, at one extreme.

*b. 38, 39.* Two Pieces, very thin, and flat, compos'd of a dark grey Stone, thick set with small Spangles of a white silvery Talc. This was above a Yard long, and had a Root somewhat waved and bifid. *Lanelthy.*

*b. 40.* Another, with a Creest running length-ways of it. There are *Papillæ* also, as in the rest: and Wrinkles, as if the Body had been somewhat compress'd and flattened by some external Force. 'Tis compos'd of a grey sparry Stone. It seems to have had something answering a *Medulla*, or *Pith*, running length-ways through it, not in the Middle, or Axis, but somewhat approaching that side on which the Creest is. This has slight Remains of an external black *Cortex*. I observ'd like Wrinkles, and Phenomena, on several others of these Bodies. *Lanelthy.*

*b. 41.* Another, from *Lanelthy*, of a pale brown sparry Stone. This has running length-ways of it a pretty deep Creest, and, in it, a Body that at one End is extant, and appears in the Creest: but, at the other, is immers'd in the Stone, so as there to resemble what I have mention'd in *b. 40.* as a *Pith*: and 'tis, probably, the same with that. This appears as a Branch arising out of the main Trunk: and indeed is no other. At first I judg'd it a *Pith*. But a more careful View of this Body, *b. 41.* and *b. 42.* brought me to think it rather the Commencement or Beginning of a Branch. *Confer. b. 45. infra.*

*b. 42.* Another, little different, with a like Body in the Creest. *Lanelthy.*

*b. 43.* Another, of a light grey sparry Stone; tinged in some parts with a yellowish or Ochre Colour, that seems to be adventitious, and introduced by the Weather, to which some of these Bodies had lain expos'd. The *Papillæ* in this are different from those of all the precedent; being flatter, or rising much less, and having in the Hollow a small Point, or Apex, in the Middle. This has a *Pith* in it. *Lanelthy.*

*b. 44.* Another of a round Shape, and nearer approaching a Cylinder than any of the former. The *Papilla* of this differ little from those of *b. 35.* & *seq.* only they are less. It consists of a pale grey sparry Stone, rendred brown by the Weather. It has a Pith, tho' there be no Creest on the Surface. *Lanelthy.*

*b. 45.* Another, little different, only the *Papilla* are somewhat bigger. This has also a Pith appearing at one End, but not at the other; which likewise I took notice of in several others of these Bodies, so that it does not pass the whole Length of them. *Lanelthy.*

*b. 46.* Another, compress'd unequally. These Bodies seem to have been tender and soft, as the *Arbor Lavendula Foliis* is. *Lanelthy.*

*b. 47.* Another, with a Body like that in *b. 41.* in the Creest. This is of a sparry Stone, mix'd with red and yellow. In one of this sort I observ'd the *Papilla* passing [as the Knots in Fir-Wood] like so many Pins, from the Surface to the Axis of the Body. *Lanelthy.*

*b. 48.* Another, compos'd of a grey sparry Stone, with *Papilla* on the Surface, in a Quincunx Order. It has the interior Body, or Pith, passing the whole Length of it. 'Tis broke, so as to shew the Figure and Constitution of the interior Body. This was cover'd over with a thin, black, shining Cortex, that shiver'd and fell into a black Powder. It appear'd to be of a Constitution not different from that wherewith the exterior Body is wont to be invested. *Conf. b. 35.* This was found in a Bed of Shiver, about 6 Foot deep, in a worn Hollow-Way, in *Caermarthen* Road, four Miles short of *Tenby*.

*b. 49.* Another. *Houghton* Coaleries, *Bishoprick of Durham.*

*b. 50.* Another, much compress'd. *Houghton.*

*b. 51.* This is so much flatt'd, as to be reduced to near a Plane. Indeed it appears like the Skin, or Cortex, of the *Arbor Lavendula Foliis*, smooth, and clapt on a flat Piece of Shiver. The various Degrees in which these are flatt'd, some more, some less, shew this Shape to be forc'd, and that they are naturally cylindrick. This is out of a Coal-Pit, near *Kirrhlygear, Wales.*

*b. 52.* An Impression of a Body, flat, or plane, with undulated Lines on the Surface, and round Marks, ranged in a Quincunx Order, on a dark grey Shiver. *Houghton* Coalery.

*b. 53.* A Body, flat, having on it *Sulci*, parallel at the Distance of somewhat more than an Inch. On the Intervals are Marks, not very unlike those of *b. 43. supra*, and likewise set in a Quincunx Order. *Houghton* Coalery. 'Tis cover'd with a thin, black, bituminous Crust.

*b. 54.* Another, with the *Sulci* somewhat nearer. Out of the same Coalery.

*b. 55.* Another. On the Surface of this are very fine small *Striae*, running parallel to the *Sulci*. Out of the same Coalery.

*b. 56 & 57.* Bodies, somewhat resembling the *Vesicula* of the great *English* Fucus. *Kirrhlygear* Coal-pits, *Wales.*

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## A CATALOGUE of the Second Addition of English Native Fossils.

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### OCHRES.

*a.* 1. **A**N Ochre, vein'd; from *Rose-Park*, in *Cumberland*. 'Tis very light, fine, and impalpable. The like is frequently observ'd in Adits of Coal-pits, in *Cumberland*, *Northumberland*, and *Yorkshire*.

*a.* 2. An ochreous Matter, found in the midst of a Bed of Chalk, at the Depth of about 50 Foot, in the great Chalk-pit at *Greenhithe*, *Kent*. The whole Mass was near as big as a Man's Head.

a. 3. An ochreous earthy Substance, fibrous, and flakey, with a Grain not unlike Wood, seeming to be a Sample of a Vein; out of a Quarry near *Plymouth*.

a. 4. Rudle. *Quarrington Hill, Durham*.

#### BOLES, CLAYS, CHALK.

a. 5. An Earth, astringent, and of a red Colour; found in a Cavity of a Block of Grit-Stone, on *Stubbin-Edge*, in *Ashover* Parish, *Scarsdale*. This is what the *Germans* call *Steinmark: Agricola, Medulla Saxi*, and—*Marga in Saxi inclusa*.

a. 6. Earth, stiptic, of a reddish brown Colour. Out of a Sand-pit, in *Sir Walter Young's Yard* at *Escott*, betwixt *Exeter* and *Honyton, Devonshire*.

a. 7. Tobacco-Pipe Clay, from the Isle of *Wight*. They call it *Hayters-Clay*. This Sort is very fine. 'Tis indeed the finest in *England*, but apt to shrink in baking: So that they do not work it alone, like that of *Pool*, but make up  $\frac{1}{2}$  of the following Sort along with it.

a. 8. Another Sample, coarser, from the same Place.

a. 9. Clay, very pale, near white; fine and clean. From *Purbeck* Island. 'Tis used for the making of Tobacco Pipes. As also for the making of the more ordinary Pots at *Fulham*; where 'tis call'd, *The blue Purbeck-Clay*.

a. 10. Clay, paler, and whiter than the former: Also from *Purbeck* Isle. Used for Tobacco Pipes. Likewise for the finer Pots, at *Fulham*; where 'tis call'd, *The white Purbeck Clay*. This, and the former, burn, in their Fire, which is very strong, to Yellow: and not to a White. The Whiteness of their Ware is caus'd by the other Ingredients, which they mingle and work up with their Clays.

a. 11. Pieces of small Scallops, in Brick-Clay, dug up near *Pindar* of *Wakefield*, behind *Gray's-Inn*.

a. 12. Clay used for the making of Tiles, from the Clay-Pit at *Turnham*, within 3 Miles of *Maidstone, Kent*. There are Remains, and Impressions of Scallops on this also.

a. 13. Earth out of a vast Chalk-Pit, in *Buckinghamshire*, betwixt *Blechly* and *Leighton*. 'Twas pitch'd in the Chalk in manner of an erect Cylinder, about 2 Foot in Diameter, and 40 Foot in Length; appearing as if a Shaft had been sunk in the Chalk, and afterwards fill'd up with Earth. The Earth was all of this sort, from the Top to the lowest Part of the Cylinder that was discernible, which was to the Bottom of the Pit. How far deeper it might go down, is uncertain. I have seen several like Cylinders, and some of a greater Diameter, in the Chalk-Pits of *Northfleet*, and *Greenhithe*, in *Kent*: And have sometimes suspected that these were left empty, and that Part of the Water, after the Deluge, return'd by these, into the Abyss; they being afterwards fill'd with Earth. This is certain, the greater Part,

Part, if not all, that vast Mass of Water retir'd by the Chafms, and Apertures, at the Bottom of the Ocean.

a. 14. Chalk, compos'd of plain parallel Plates, each about  $\frac{1}{20}$  of an Inch in Thickness, alternately white and a pale yellow. This lay near the upper Surface of the Grand-Bed of Chalk: So that these were probably so many Settlements, towards the latter End of the Subsidence of that Bed, when there was but very little cretaceous Matter sustain'd behind in the Water; the main of the Mass being settled down before.

a. 15. Chalk out of a vast Chalk-Pit in *Buckinghamshire*, betwixt *Blechly* and *Leighton*.

#### S A N D S.

a. 16. Sand, from *Bestead*, near *Maidstone*, in *Kent*.

a. 17. Sand, common on the Shores betwixt *Minster* and *Shearness*, in the Isle of *Sheppy*. There are amongst this, indeed, Fragments of Shells, reduc'd to Powder by the Agitation of the Sea: But the greatest Part of it consists of extremely small Pebbles of the very same Kind with those commonly found in Sand-Pits, at Land, in various Parts of *England*; particularly in several Parts of *Kent*: and doubtless in the *Mediterranean* Parts of *Sheppy* Island, were due Search made. Indeed there is no question but this very Sand is wash'd out of the Cliffs there, as the *Ludus Helmontij*, and other Bodies found with it certainly are; which I the rather mention, because some Medlers with natural History speak of *Sea-Sand* as a Thing different from *Land-Sand*.

a. 18. Loom, out of the great Sand-Pit near *Woolwich*. It lies underneath the Earth in which the Shells are found. 'Tis good: and used in the Iron Foundery there, for casting of Cannon Balls, Bombs, &c. 'Tis also used in other Iron Founderies about the Town.

a. 19. Sand out of a Stratum, underneath the Loom, at *Woolwich*. This Stratum is clear'd to 20 Foot in Depth; how far deeper it may lie, is uncertain.

a. 20. Sand, and Ooze, taken up from the Bottom of the *Thames*, on *Yanlet-Spit*, off the Isle of *Grains*, not far from the *Osia* of the *Thames*.

#### STONE of STRATA.

b. 1. Part of a Stratum, of Sand-Stone, of a pretty fine Grit, one Inch and  $\frac{3}{4}$  in Thickness; with Veins alternately grey and brown, running parallel to the Surface of the Stratum. There are in it numerous very small Spangles of a white silvery Talc. Out of a Quarry on *Overton Hill*, in *Ashover* Parish, *Scarsdale*, *Derbyshire*.

b. 2. A gritty Stone, with small Spangles of a white silvery Talc in it, and much of the same Composition with that of the Body 14  $\frac{1}{2}$ , in the Catalogue of the *English* extraneous Fossils, which was found lodg'd in the Stratum, off which this  
Piece



Piece was struck, only 'tis of a somewhat paler brown Colour. This Stratum appears above the common Surface, on *Overton Hill*, in *Ashover* Parish, in *Scarsdale*, *Derbyshire*.

b. 3. Stone of much the same Colour with the foregoing, and with like Spangles in it; but having a larger Grit, consisting chiefly of very small pellucid Pebbles, not different from those of the Grit-Sand. Also from *Overton Hill*.

b. 4. Freestone, i. e. that rives, splits and breaks indifferently in any Direction. 'Tis compos'd of Sand, white and brown; with an Intermixture of small silvery Micæ. Got at - - - - near *Newcastle*. 'Tis used for Building. Also for Glass-Furnaces. It abides the Fire well, if kept constantly hot: but cracks when the Fire goes out.

b. 5. A Piece of Stone, of the sort foregoing, that has stood a Year in a Glass-Furnace. When thus impair'd by the Force of Fire, they grind it down to Powder: and mixing it with *Sturbridge-Clay*, employ it for making the Stands or Rests on which they place the Pots in which they melt Glass.

b. 6. This sort of Rudle Stones lie all over the Ground, about *Shorover*, for a considerable Space, in the Sand, the Stratum of which is about a Foot thick, as Flints lie in Chalk.

b. 7. Part of the Rock-Stone, from a Cliff about half a Mile North of the *Lizard Point*, *Cornwall*.

b. 8. A Stone, brown, with a Cast of Green: thick set with small Holes, some of them fill'd with a blackish stony Matter. Found on *Blackberry-Hill*, near *Stratton*, *Devonshire*. There were many more lying on the Ground thereabouts: And there are also of them in *Cornwall*. They are call'd *Honey-Comb-Stones*, in both Counties.

b. 9. A light, smooth, friable, earthy Substance, of a brown Colour, used for cleaning Bras: And for polishing Crystal, *Bristol* Stones, Pastes, Enamels, and factitious Gems. From - - - - *Derbyshire*. The Workmen call this, *Rotten Stone*.

b. 10. A Mass of Stone, brown, with Veins of white Spar in it, very common in the Brooks and Rivers of *Cumberland*. They are beat out of the Rocks, and worn by the Water.

b. 11. A Piece of Stone, near the Constitution of a Hone, from the Shores of *Whitby*.

b. 12. A Stone interchangeably variegated with parallel Veins of black and white; with Veins of Spar crossing it obliquely. This was found on the Side of a Vein at *Fatwork*, *Cornwall*.

b. 13. A Shoad Stone, with no Tin in it; found in the Shoad amongst others that held Tin, at several Fathoms deep, but above the Rock, or solid Stone, on *St. Agnes-Ball*.

#### SLATE.

b. 14. A brown Slate, with numerous small Spangles of white silvery Talc in it. Out of a Quarry on *Overton Hill*, in *Ashover* Parish, *Scarsdale*, *Derbyshire*.

b. 15. Slate, very fine, got near *Broadgate-Park*, in the Manor of *Grooby*, *Leicestershire*. Lord *Stamford*.

b. 16. The common Stone of the Mine of *Comb-Martin*, *Devonshire*. 'Tis found over a great Part of the County, and call'd there *Killus*.

b. 17. A thin Slate; grey, with a Cast of Green; having very small Sparks of a white silvery Talc in it. This sort lies immediately over the Pitch Stone, at *Bentall*, in *Shropshire*.

#### MARBLE.

b. 18. Marble, the Ground black, vein'd with red, yellow, and white. From a Quarry near *Plymouth*.

b. 19. Marble, the Ground white, spotted and vein'd with red. Also near *Plymouth*.

b. 20. Marble, vein'd, and spotted, with Black, White, Red, and Yellow. From a Quarry near *Torbay*.

b. 21. Marble, spotted with White, and a dusky Grey, near Black. This Marble is very fine; but mighty full of Flaws. *Torbay*.

These 4 Sorts of Marble, and indeed all the Marble of *Devonshire*, burn to a Lime: whereas the *Genoese* Marble burns to a Grit, or sandy Substance.

b. 22. Dendrites. Found loose, on the North Shores of *Caldy-Island*.

b. 23. Porphyry. The Spots are probably Fragments of Shells, and other like marine Bodies, incorporated with the Marble. From the Shores of *Scarborough*, *Yorkshire*.

b. 24. Granite. From the Shores of *Scarborough* also. Are not this and the former Ballasts: and brought from abroad?

b. 25. Stone, somewhat resembling Granite, very common in the Brooks of *Cumberland*.

#### *Pebles, Agats, Flints, Flinty Ætite, & Geodes.*

c. 1. Stone, of a yellowish brown Colour, thick set with white Pebles, generally about the Size of Pease. This is much of the same Tenor, with one kind of Millstone; only 'tis of a coarser Grain. From *Lumms* in the Parish of *Matlock in the Peak*. This Piece was broke off a Stratum that was above Ground, and expos'd to the Air.

c. 2. A Peble, round, seeming to be compos'd of many small ones, chiefly white. Found, near *Tamworth*, in *Staffordshire*.

c. 3. Pebles, join'd by a sparry Cement. Very frequent about *Barkhamstead*; and call'd the *Breeding-Stone*. The Mass appears to have been rounded and worn by the Motion of Water. This happen'd to great Numbers of Bodies, at the Surface of the Earth, on the Departure of the Water of the Deluge.

c. 4 Found with the precedent, near *Barkhamstead*.

c. 5. A Mass of Pebles, found in the Road betwixt *Puckridge* and *Ware*.

c. 6.

c. 6. From *Aldenham*, near *Watford*, *Hertfordshire*. Like Masses are frequent thereabouts: And some very large to near a Tun in Weight. 'Tis call'd there *Pudden-Stone*.

c. 7. Part of a cemented Mass, found very plentifully in a Field, call'd *Starv'd Acre*, near *Barkhamstead* in *Hertfordshire*.

c. 8. A Plate, cut off a Peble, and polish'd. 'Tis spotted with Red, White, and a dusky Brown near Black. Near *Barkhamstead*, *Hertfordshire*.

c. 9. Another, on one Side a plain Agat Ground, of a dusky Hue: on the other striped with a greenish Yellow, and White; with some Spots. Found near *Stepney*.

c. 10. A flinty Peble, having on one Side semicircular Lines, alternately grey and brown. Mr. *Miller*.

c. 11. A Plate, cut off the same, and polish'd.

c. 12. A flinty Peble; cut and polish'd on one Side; striped with Ash-Colour and Grey, near *Charlton*, *Kent*.

c. 13. A flinty Peble, striped, near *Barkhamstead*.

c. 14. A Peble, in one Part finely lineated with White and Brown alternately. Found in the Garden of *Adgcomb*, near *Croydon*, *Surrey*.

c. 15. A small Peble finely lineated. Found upon plow'd Lands in a Field, in *Beckenham* Parish, near *Langley* in *Kent*. It has been broke, and glew'd together again. The Lineations are superficial, and do not enter the Substance of the Stone.

c. 16. A Piece of a variegated flinty Peble, struck out of 2 large Masses of Pebles cemented together with the common natural Cement. This Mass was 2 or 3 Tun in Weight: and found by *Corner-Hall*, near *Hampstead* in *Hertfordshire*, in which Country there is great Plenty of like Masses.

c. 17. Another, out of the same Mass.

c. 18. Another, likewise out of the same Mass.

c. 19. Another, variegated with red, yellow, and corneous. At *Cross of the Oak*, near *Barkhamstead*, *Hertfordshire*.

c. 20. A sort of Net-Work, yellow; in a dark grey Flint. Found near *Keston*, 2 Miles beyond *Bromly*, *Kent*,

c. 21. Flint; striped, and spotted. Near *Barkhamstead*.

c. 22. A Jasp-Achates. Near *Barkhamstead*.

c. 23. Part of an agaty Flint, that was about 2 Inches in Diameter; the whole cover'd over with a friable cretaceous Crust. Found near *Croydon*, *Surrey*.

c. 24. A brown Flint of an oblong Shape, near *Cylindric*; seeming as if compos'd of various Plates, set edgeways by each other. From a Gravel-Pit by *North-Mimms*, *Hertfordshire*.

c. 25. A Flint inviron'd with circular Striæ. Found in a Gravel-Pit near *Upminster*, in *Essex*.

c. 26. Another out of the same Gravel-pit.

c. 27. Part of a flinty Peble, that was near as big as a Man's Head; thick set with small round Cavities, each having a Pa-

illa at the Bottom. Only Part of the Surface was thus mark'd. Found on the *Common* just beyond *Epsom*.

c. 28. c. 29. Two small round Flints, with a kind of reticular Work upon their Surface, found in a Gravel-pit, near *Mile-End, Middlesex*.

c. 30. Part of a flinty Peble, lineated, and spotted, externally, in a very strange Manner. The rest, that is broken off, was black. Found in a large Gravel-pit, near *Beckenham, Kent*.

c. 31. A Flint, having somewhat of the Disposition of a *Mycetites* on it. *Greenhithe* great Chalk-pit at the West-end of the Town.

c. 32. Another, of different Shape, with a circular Work upon it. *Ibid*.

c. 33. A flinty Peble; the Surface black, finely vein'd with yellow; found in the Field call'd *Starv'd-Acre*, near *Barkhamstead, Hertfordshire*.

c. 34. A round Flint, having on the Surface several small round Cavities. Found near *Mitcham*, in *Surrey*, in Mr. *Dubois's* Garden; where he says, Flints, not unlike these, are pretty frequently found.

c. 35. Another, globular, having in the Center a Cavity thick set with Crystals. There are of these Globules, of several Bulks, whose Cavities likewise, and their contain'd Crystals, are of different Sizes. Found in *Greenhithe* great Chalk-pit, at the West-end of the Town.

c. 36. A Flint, oval, broke, so as to shew within a Cavity thick set with small Crystals. From the Coasts of *Sussex*, near -----

c. 37. A dark grey Flint, broken; with a Cavity in the Center, thick set with pentangular and hexangular Crystals. Found near *Chizelhurst*, betwixt *Bromly* and *Dartford, Kent*.

c. 38. Flint with Crystals in it. Near *Barkhamstead*.

c. 39. A common grey Flint, with Crystals on one Side of it. Found in a Chalk-pit, by *Eriffe*, near *Dartford, Kent*.

c. 40. A Cylindric Flint, semipellucid, or of a horney Constitution. The Surface is very tuberosous: and frosted over with numerous shining crystalline Sparks. Found in a Chalk-pit, near *Croydon, Surrey*.

c. 41. A Flint of a Cylindric Figure, having in it a Cylindric Core. Found near *Mitcham*, in *Surrey*, in Mr. *Dubois's* Garden; where he says, Flints, not unlike these, are pretty frequently found.

c. 42. A black Flint, oblong, hollowed, and having in it a cretaceous Matter. *Greenhithe* great Chalk-pit at the West-end of the Town.

c. 43. An oblong black Flint, with a white Crust without, and a white Core within. Out of a Chalk-pit, near *Guildford, Surrey*.



c. 45. A Mass compos'd of Chalk and Flint. *Greenhithe* great Chalk-pit, at the West-end of the Town.

c. 46. A Geodes, the exterior Crust white: the interior brown. 'Tis an Agate, or corneous Flint. The central Cavity was full of Chalk. *Beddington, Surrey.*

c. 47. A Geodes, from *Southery, in Norfolk.*

c. 48. A small Geodes, from *Islington.*

c. 49. A Geodes; being a small round black Flint, having a Cavity with a cretaceous Matter in it. This was taken out of a Chalk-pit near *Chatham, Kent.* They are pretty common, and of several Sizes, in the Chalk-pits of *Surrey, Kent, and Essex.*

c. 50. A small *Ætites*, broke and perforated, so as to shew the *Callimus* loose within. Found near *Barkhamstead.*

c. 51. An *Ætites*, found in a Gravel-pit, near *Upminster, in Essex.*

c. 52. *Ætites.* Found in a Field near Mr. *Evelin's* House at *Wotton, Surrey.*

c. 53. A Flint, brown, with a Cast of Green, of an oblong cylindric Figure, hollow within, and having one large, and many lesser Holes, passing from the Surface into the said Hollow. This Sort seems to be nearly related to that call'd *Ætites*, of which I have seen several of this Constitution, and Complexion. All the Difference is, that these have Holes passing to the Surface: which those have not. These, when first taken forth of the Earth, have sometimes Stones, and sometimes Sand, in them; which are what rattle and make a Noise, when shook, in those. Found in a Gravel-pit on the South-side of *Marybone.*

c. 54, 55, 56. Three others of like Constitution, and Complexion: and having Holes passing into them in like manner. Found in the same Gravel-pit. These are of a triangular Form, to which this Body has a great Tendency and Disposition: and I have observ'd great Numbers of these Bodies in the Gravel-pits all round this Town.

c. 57. Another Flint, white without, but of much the same Colour with the precedent within: of the same Shape also, and having like Holes into it. Found in the same Gravel-pit.

c. 58. A yellow Flint, with 3 Prominencies, hollow. This Sort is common, and of several Sizes, and Colours, in the Gravel-pits about *London.*

c. 58<sup>x</sup>. An oblong, whitish, hollow Flint. *Downs, near Hendon, Wiltshire.*

c. 59. Flint, flat, out of a perpendicular Fissure, in the great Chalk-pit at the East-end of *Greenhithe.* This Flint has been run, and form'd since the Settlement of the Chalk. See an Account of it drawn up in a Paper apart.

c. 60. The common Grey-Flint, broken so as to shew a Mass of a yellow shining Pyrites in the Center of it. Mr. *Rand.*

c. 61, 62. Two Flints, with Pyrites adhering to each. Found in a Heap of Stones near *Adgcomb* House, by *Croydon, Surrey.*



c.63. A Flint somewhat resembling a Horse's Hoof; found by Col. *Hatley's* House, near the River *Medway*, *Kent*.

c.64. A Stone of a dark brown Colour; and environ'd with a thin Crust of lighter brown. Found under *Harwich* Cliff, by Mr. *Groome*; who fancies this of the Size and Form of a Magpye's or Crow's Egg. There were more found there of like Size and Form: and he will have it, that these were antediluvian Eggs fill'd with stony Matter; observing that these Eggs are frequent in *Spring* Season, when the Deluge began.

c.65. A small black smooth Pebble. *Lowther* River, *Westmorland*. These are found there in great Numbers.

c.66. A small Mass of Stone, of a Grain very fine. 'Tis near black: and may serve for a Touch-stone. From *Portland* Beach; where are great Numbers of like Masses.

c.67. A perforated Stone; from the Shores near *Weymouth*.

#### TALCS striated.

d.1. White Talc, stringy or fibrous; from *Culgaith* in *Cumberland*. Lord Bishop of *Carlisle*.

d.2. A small Piece of Talc, that appears to have been flat, and contain'd in a Vein, compos'd of parallel transverse Fibres, white, of a glossy talky Constitution. From *Culgaith*, *Cumberland*.

d.3. Found likewise at *Culgaith*, with the two foregoing, but in a narrower Vein.

d.4. A Piece of fibrous Talc, found near the Surface, in Masses, ----- some near 20 Foot over, and half a Foot thick, lying in Earth horizontally, and the Fibres perpendicular. Near --- Miles on this Side *Weymouth*.

#### TALCS foliated.

d.5. Spangles of the *Mica Argentea*, very thick and numerous, in a red slaty friable Stone. From the Banks of the River *Caldew*, in *Cumberland*.

d.6. Talc of a brown Colour. From *St. Colomb major*, *Cornwall*.

d.7. *Talcum argenteum*, digg'd up, in a Yard, in *Lowth* (I think) near *Stamford*.

d.8. A Mass, compos'd partly of a coarse white Spar, and partly of a black shining Talc. From - - - in *Devonshire*, Mr. *Baden*.

d.9. Part of the Eddy-Stone, on which Mr. *Winstanley's* Light-House was built. 'Tis compos'd partly of white Spar: partly of Flakes of black, and partly of silvery Talc.

d.10. *Lapis specularis*, rais'd, in great Quantity, at considerable Depth, in a Tin Mine, near *Trewithick*, *Cornwall*. Mr. *Hickes*.

d.11. *Mica rubra*. Found in vast Quantity, the Stratum 30 Foot thick, at *Anfely*, in *Devonshire*.

*Ludus Helmontij.*

e. 1. *Ludus Helmontij*, from the Shore of *Sheppey*, near *Minster*. There are some Shells in the Mass of the Tali of this.

*Some Observations, made on the Ludus Helmontij, in this Voyage.*  
August 27. 1709.

There were some flat Masses of *Ludus Helmontij* 3 Foot in Diameter: and near a Foot in Thickness.

In this Voyage I observ'd some here with a Cortex or Crust investing of them; which is common in those found in other Parts, tho' I did not observe it here in my former Voyage: and I am persuaded I then saw some naked, and without any such Crust upon them, actually lying in the Cliffs, where the Crust could not be worn off, as it might be of those on the Shores, by the Agitation of the Sea.

In some the Septa do not pass directly through: but are intercepted in the Midst with a transverse Septum in manner of a Diaphragm, running thro' the Midst, horizontally, and parallel to the Flat of the Stone, so as to intercept all immediate Communication betwixt the erect Septa above, and those below.

I observ'd the *Ludus Helmontij* in various Parts, and even in the Middle, of the Isle of *Sheppey*.

e. 2, 3. *Ludus Helmontij*. Out of a Clay-pit, at the East-end of *Highgate*. They are ground and polish'd on one Side. The Workman tells me the Tali are near as hard as the white *Genoese* Marble, and the Septa rather harder than that Marble.

e. 4. Pieces \* of a *Lapis Syringoides* that were incorporated with a Mass of the *Ludus Helmontij*; only the Pipes are ever in a brown fibrous Substance, much resembling Wood, and never in the common Stone; which may cause a Suspicion that this was originally Wood, perforated by *Erucæ*, or other Insects, and the Perforations afterwards lin'd or fill'd with Spar, Pyrites, Grey-Sand, &c. But, if this was done, it must have been before the Wood was lodg'd in the Mass of Stone. For I have observ'd of these brown Masses, with the Pipes in them, in the very Center or Midst of a large Mass of *Ludus Helmontij*: and so invested and cover'd with a stony Mass on all Sides, as to bar any Access from without to Insects. That Wood should be incorporated with the *Ludus Helmontij*, and now found immers'd in the Substance of it; is not more strange, than that Shells should be so found; which they frequently are. Shores near *Minster*, *Sheppey*-Island.

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\* Here is but one; the other Pieces are recounted. e. 10. & f. 5, 6. infra.

e. 5. *Ludus Helmontij*; found in sinking a Pit for Water in the upper Part of *Epsom, Surrey*.

e. 6. *Sheppey-Island*, near *Minster*.

e. 7. A brown Stone, broke, to shew the interior Constitution of it. 'Tis of the *Ludus Helmontij* Kind; the *Tali* consisting of a brown Stone, the *Septa* of a brass-like shining *Pyrites*. From the Cliffs of *Sheppey-Island*. This is of the same sort with those in the first Part of the *Catalogue of English Fossils*, p. - - - b. 28, and 29. so that those ought to be remov'd out of the Class of *Pyrites*, to the Class of *Ludus Helmontij*. Those in that Class, p. - - - d. 17, 18 and 19. seem not to differ from these, only that the *Septa*, or thinner, terminate at the Surface of the Stone, and are not so prominent as in these.

e. 8. *Sheppey-Island*, near *Minster*.

e. 9. Broke off of a large *Ludus Helmontij*, that had the *Septa* throughout very fair and plain; of which indeed there are Remains yet upon this Body. Near *Minster, Sheppey-Island*.

e. 10. Broke off e. 4. *supra*. *Sheppey*.

e. 11. *Ludus Helmontij*, with the *Septa* much of the Colour and Constitution of the common *Belemnites*; found in sinking a Pond for Water, in a Close of Mr. *Norse*, in the Parish of *Stanstead Mount-Fitchet*, 3 Miles beyond *Bishop-Stortford, Essex*. There were found several Masses of the same.

e. 12. A Piece of *Ludus Helmontij*. Out of the Cliffs betwixt *Limington* and *Christ-Church, Hampshire*.

e. 13. A Mass of *Ludus Helmontij*, whole, but seeming to be worn by the Action of the Water, at the Departure of it at the latter End of the Deluge; which Action the sparry *Septa* appear more firmly to have withstood, than the intermediate *Tali*, which indeed are not of a stoney, but a pretty dense clayey Constitution. Found in the Stratum of Clay, in the Tile Clay-pit near *Richmond-Wells, Surrey*.

#### *Lapis Syringoides, or the Piped Waxen-Vein.*

f. 1. *Lapis Syringoides*. In these some of the Pipes have sparry Diaphragms. Shores near *Minster, Sheppey-Island*.

f. 2. Another, with like Diaphragms. *Ibid*.

f. 3. Another Piece. *Sheppey-Island*.

f. 4. *Sheppey-Island*.

f. 5, & 6. Broke off e. 4. *supra*. *Sheppey*.

f. 7. *Lapis Syringoides*. From the Cliffs of *Sheppey-Island*.

#### *Bezoar Minerale Geodes.*

g. 1. *Bezoar Minerale*. *Carshalton, Surrey*.

g. 2. *Bezoar Minerale*. Out of the great Sand-Pit, at the West-End of *Woolwich*; in which these are very numerous.

g. 3. *Bezoar Minerale*. *Kepier-Wood, near Durham*. This was flat, and somewhat larger than the Palm of a Man's Hand. 'Twas cover'd all over with the Crusts.

g. 4. *Geodes*. *Ibid*.

g. 5. Part of the exterior Crust of a *Geodes*, holding Iron, and wrought for that Metal at *Birchdon-Forge*; got out of a Hill near by, about 2 Miles from *Tunbridge-Wells*.

g. 6. A yellowish, brown, ochreous, sandy Earth, with Veins in it very thick, seeming to be of Iron. The Mass off which this was broke, must be above a Ton in Weight. It fell down from the upper Part of the great Sand-Pit at the hither End of *Woolwich*. The whole Mass had like Veins running through it; consequently it could not be a Nodule: and the Veins must have been form'd after the Matter was settled into this Stratum.

g. 7. A Mineral Substance, of the Nature of the *Bezoar Minerale*, running strangely in Veins, or Plates, to and again, so as to form Cells of various Sizes, that are fill'd commonly with an ochreous Matter, of much the same Kind also with that found in the *Bezoar Minerale*. There are Masses thus run to a vast Bulk; indeed the Stratum seems to be wholly compos'd of them, sometimes for 10 or 12 Foot in Length. Mr. *Hutchinson* says they are common in *Sussex*, near *Petworth*: and that the Body, N<sup>o</sup> 6. 77. in his *Catalogue*, p. --. was Part of one. This was taken forth of a Stratum lying over the Sand, in the great Pit at the West-End of *Woolwich*.

g. 8. An ochreous Substance, taken out of a Cell of the same Mass; *i. e.* of g. 7. preceding.

#### SELENITES.

b. 1. A *Selenites*, having in it Flaws, Lines, and Flakes of blue Clay, shewing that the Progress of the Formation of the Body was all along in a Rhomboid-Figure: and that it is every way compos'd of Plates, parallel to those of the several Planes of the exterior Surface. Tho' they seem to be separable, and dispos'd to part and split chiefly in Parallels to the broadest Planes. *Whenton, Buckinghamshire*.

b. 2. *Selenites*, either of a shatter'd Constitution originally, or brought into this broken State in Tract of Time. Many of the Parts appear to be of a Rhomboid-Figure. Out of Mr. *Watts's* Tile-Ground, call'd *Childrens-Field*, in the Parish of *Thurnham*, within 3 Miles of *Maidstone, Kent*.

b. 3. *Selenites*; found in digging the Purgings-Well at *Stanford le Hope, in Essex*. They there suppose it to be the Mineral that impregnates that Water.

b. 4. *Selenites*; from *Wothorop-Lane, nigh Stamford*, a Seat belonging to the Earl of *Exeter*, where there is plenty of it.

b. 5. *Selenites*; out of the Cliffs betwixt *Limington and Christchurch, Hampshire*.

b. 6. Very many small *Selenites*, lodg'd in a Lump of a yellow clayey Matter. Found in a Tile Clay-pit near *Pancridge, Middlesex*.

b. 7.



*h. 7.* A Body, of like Substance and Matter with the *Selenites*, crySTALLIZ'd in a very observable manner. Out of a Potters Clay-Pit at *New-Cross*, near *Deptford*, in *Kent*, on the Right-Hand of the Road from *New-Cross* to *Lewsham*.

*h. 8.* A Body of like Matter and Substance with the *Selenites*, but compos'd of small round Plates, crenated on the Brims, and set edgewise in various Postures. From a Brick Clay-pit on the South-Side of *Islington*.

*h. 9.* Another; from the same Pit.

#### BELEMNITES.

*i. 1.* A *Belemnites*; found, with *Ammonite*, and various Sea-Shells, at a considerable Depth in the Earth, below 3 Strata of Stone, at *Stoke*, 24 Miles from Sea, in the Mannor of *Castle-Cary*, *Somerſetſhire*. Sent by Mr. *Player*. See his Letter Sept. 21, 1708.

*i. 2.* *Belemnites*; found in a Field near *Lillington-Dorill*, *Buckinghamſhire*.

*i. 3.* A *Belemnites*, in a *Marcaſite*; from the Shores of *Whitby*, in *Yorkſhire*.

*i. 4.* *Belemnites*, the outer Cortex wholly off. Out of a Chalk-Pit near *Sturminſter-Marſhal*, *Dorſetſhire*. This is, in Colour, tending towards Amber: and has ſome ſmall degree of Diaphaneity.

*i. 5.* *Belemnites*. *Wotton*, *Oxfordſhire*.

*i. 6.* A *Belemnites*, with part of the outer Cortex, which is very thin, ſtripp'd off. Out of a Chalk-pit near *Sturminſter*, *Dorſetſhire*.

*i. 7.* A grey Flint, with a Hollow in it, in Form of the *Belemnites*: as alſo a jointed Cone, like thoſe of that Body. Found near *Bromley Church*, *Kent*.

*i. 8.* Another Flint with a like Cavity and Cone in it; found in *Kent*, near *Bexly*, about three Miles from *Dartford*.

*i. 9.* A grey Flinty-Peble; found in a Field in *Beckenham* Pariſh, near *Addington-Common*. 'Twas perfectly intire when found: but being broke, ſhews a *Belemnites*, and ſeveral Fragments of the Shells of *Echinite*, within, immers'd in the Maſs of it. The Surface of the *Belemnites* is every where contiguous to the Maſs of the Flint; ſo that it was not inveſted with any Shell when 'twas lodg'd in this Flint: and there is no Room or Space void betwixt them, as we ordinarily ſee where there are *Echinite*, or other like Bodies found in Flints, the Shell, in which they were form'd, being perish'd and gone. See the *Catalogue of the extraneous Engliſh Foffils*, *h. 33*. I note this, becauſe ſome lately have fancy'd the *Belemnites* caſt in a Shell.

#### CORALLOIDEA.

*k. 1.* A Piece of black Flint. Found in the great Chalk-pit at *Croſs-of-the-Oak*, near *Barkhamſtead*, *Hertfordſhire*, with a ſmall Sprig upon it ſeeming to be of a Nature mix'd, and compos'd partly



partly of a coralline, and partly of a flinty Matter. The Sprig is of a reddish Colour; and the red Coral, of which Mr. *Steel* made the Delineation, was found in this Pit. Indeed he says most of the Flints in this vast Chalk-pit have more or less of coralline Matter upon them, or incorporated with them.

k. 2. Branched coralloid Bodies, from a Quarry in *Fairford-Field*, North-east of the Town, *Gloucestershire*.

k. 3. A Coralloid, out of a Chalk-pit, *Deptford*. There are Delineations of stellar Rays on the Surface.

k. 4. A Piece of black Flint, having incorporated with it a Piece of the Shell of a *Pinna Marina*, with a small Sprig of a white porous Coralloides growing upon it. 'Tis very beautiful; and the Pores in a Quincunx-Order. Found in the great Chalk-pit at *Croft-of-the-Oak*, near *Barkhamstead*, *Hertfordshire*.

k. 5. A Mycetites concreted on part of the Shell of an *Echinus*. *Croydon* Chalk-pit. As there were Shells in the Diluvian Waters, so the coralloid Matter affix'd and concreted upon them as in the Water of the Sea.

k. 6. A Mycetites. Chalk-pit, near *Croydon*.

k. 7. A flinty Mycetites, found near *Bromley*, in *Kent*.

k. 8. A Mycetites, found upon the Banks of a Brook, call'd *El-lerbeck*, near *Torpenhow*, *Cumberland*.

k. 9. Mycetites, out of the Brook call'd the *Fairy-stone-Brook*, at *Strickland-Head*, *Westmorland*.

k. 10. A Mycetites, in a yellowish flinty Pebble. Found near *Bromley*, in *Kent*; on the Surface of the Earth.

k. 11. A coralloid Body, consisting of a grey Spar; but externally infected with a brown Colour, by means of the Clay in which 'twas lodg'd. There are in it several conoid Cavities, ridg'd and striated length-ways. Found in a Field, near the Road towards *Kingston*, a little beyond *Shippon*, *Berkshire*.

k. 12. A coralloid Body, of a conoid Shape; composed of a grey Spar, of like sort with that of the foregoing Body, near which this was found. It is composed of several white sparry Plates, passing, for the whole length of the Body, from the Surface to the Axis of it. These seem also to be intercepted by many conical Plates, that pass the Body in a Direction parallel to the Surface of it. This conoid Body was originally contain'd in one of the conoid Cells of a Body of the same sort with the foregoing. And I observe in the Fields of *Wolvecot*, near *Oxford*, several of the foregoing, with this latter sort actually contain'd in them. This is nearly related to that delineated by Dr. *Plot*, *Nat. Hist. of Oxfordshire*, *Tab. vi. Fig. 2.*

k. 13. A Flint, hollow'd and lineated in such manner, as if it had had in it a Mycetites, of the same sort with those about *Oxford*. This here was found in a Gravel-pit, near *Mile-End*, *Middlesex*.

k. 14. A grey Flint, having in it a conic Body much resembling that N<sup>o</sup> k. 12. *supra*. Found upon a Hill, near *Sanderstead*, in *Surrey*.

k. 15.

k. 15. A grey Flint, part of it of the Texture of the coralloid Mycetites. Found near *Croydon, Surrey*.

k. 16. A Mycetites, in a white Pebble; found near *Bromley, Kent*.

k. 17. A Stone of an Ash-colour, very hard and dense, and capable of a good Polish\*, having in it great Numbers of ramose coralloid Pori, of a sparry Constitution. Several of them, being cut, appear to be composed of white sparry Plates, running longways of the Body, and passing from the Surface to the Axis of it; as likewise of others that intercept the foregoing, and are set pretty close, transverse, like so many Diaphragms, for the whole length of the Body. The Interstices of the Plates are fill'd with a pellucid crystalline Matter. On one side, the Stone having been exposed to the Weather, is worn, and the Bodies laid bare. Some of them here are externally black, thick set with annular Ridges; and terminate in Points; in such sort that, at first view, they appear not unlike Earth-Worms. Indeed 'twas some time before I could convince Mr. *John Hutchinson*, who found this Stone, that they were not Worms petrify'd. This was taken off the brow of *Scatter-Scar-Gill*, in *Arkendale, Yorkshire*. There is in the same part of the Hill a considerable Quantity more of the same Stone, with like Bodies in it. This Piece has in it several Sea-shells and Impressions. They are chiefly Bivalves.

k. 18. A Mass of Stone found, along with great Quantity of like sort, about 600 Foot from the former, on the Surface, at the brow of that Hill. This is of a light brown Colour, approaching a yellow; and is light, porous and friable. In breaking of it, I observ'd several Bivalves in it, of the same Species with those in the foregoing. It is very thick set in all parts with small coralloid Bodies, many of them ramose; intercepted with transverse Plates within, like the former: but externally striated lengthways of the Body. They are composed of a white Spar; but are both externally tinged with the Colour of the Stone in which they are, and have also in the Interstices of the transverse Plates, a light brown Powder, seeming to be of like sort with that which composes the Mass in which they are repositied.

k. 19. A coralloid Body, found near the River *Lowther*, in *Westmorland*. The following, to k. 33. inclusive, were found in the same Place. Lord *Lonsdale*.

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| k. 20. <i>Ibidem</i> . | k. 21. <i>Ibidem</i> . | k. 22. <i>Ibidem</i> . |
| k. 23. <i>Ibidem</i> . | k. 24. <i>Ibidem</i> . | k. 25. <i>Ibidem</i> . |
| k. 26. <i>Ibidem</i> . | k. 27. <i>Ibidem</i> . | k. 28. <i>Ibidem</i> . |
| k. 29. <i>Ibidem</i> . | k. 30. <i>Ibidem</i> . | k. 31. <i>Ibidem</i> . |
| k. 32. <i>Ibidem</i> . | k. 33. <i>Ibidem</i> . |                        |

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\* I have since caused it to be polish'd on some Parts; by which means the coralloid Bodies within are shewn. Some of them are branch'd. The Stone is of about the Hardness of the white Genoese Marble.

k. 34. Found in the Bank of a Ditch, near *Hedington*, by *Oxford*.

k. 35. *Astroites*. This and the following, to k. 39. inclusive, were found in the *Cheffels-Field*, *Coln St. Allens*, *Gloucestershire*. Where these Bodies are found in great Numbers.

k. 36. *Ibid*. This is branch'd after the manner of some coral-  
loid Pori; as is also k. 38. and k. 39.

k. 37. *Ibid*.      k. 38. *Ibid*.      k. 39. *Ibid*.

k. 40. An *Asteria*. Found in the Bank of a Ditch, near *Hedington*.

k. 41. A Piece of stellar Honeycomb-stone. Found along with the former.

k. 42. Honeycomb-stone, found at the Foot of *Shotover-Hill*, near the Road to *Oxford*.

k. 43. A flat flinty Body, thick set on one side with small Cavernulæ, so placed that the edges of them make a kind of Reticular-Work. Found near *Stretham*, *Surrey*.

k. 44. A starr'd Agate very beautiful; it is chanel'd on that part of the Outfides which is remaining, exactly after the manner of a starr'd Honeycomb-stone: and I have seen several others, that have had Stars on the Outside [as indeed this has in one part, tho' not so fair as some I have seen] like those of the Honeycomb-stone exactly. This was found, amongst several others, lying on Floors, like the common black Flints, amongst Chalk; and indeed like the Honeycomb-stone about *Oxford*. Underneath these Floors of star-red Flints lay Strata of Sand-stone, in a Quarry in *Tisbury-Parish*, about five Miles from *Shaftesbury*. I observ'd some of the Flints from this Place had but very few Stars in them: and those in Spots; part of the Flints being free, and without any Stars at all.

k. 45. Another from the same Place. The starr'd Columns in this terminate at the part of the original Surface that is remaining, in porous Stars, after the manner of sparry *Astroites*; found about *Oxford*, and elsewhere.

k. 46. A Flint, or rather an Agate, on one side shot into coralloid cylindric Stems, having their Surfaces beset with very small Tubercles, in an elegant manner. Found near *Limington*, *Hampshire*.

#### *Crystals, Spars, Incrustations.*

l. 1. A Crystal Column hexangular, terminating in a Point at each end. From *Cornwall*. This is properly a Nodule; and was form'd in the Water of the Deluge, when the *Selenitæ* and other like angular Nodules were. Vid. *Natural History of the Earth*, Part iv. Conf. 2. These crystalline Nodules are very rare.

l. 2. An hexagonal Shoot, Sprig, or Column of Crystal. From the Duke of *Somerset's* Mine, near *Keswick*, in *Cumberland*.

l. 3. An hexagonal Shoot of Crystal, or Spar, out of *Shillforth-Groove*, *Northumberland*.

l. 4. Part of a Sprig or Shoot of Crystal, in which there is a Vein, of a purple or amethystine Colour, running parallel to the Axis of the Body. From *Alston-Moor*, in *Cumberland*. Some of the Crystals of the same Fissure were tinged throughout with an amethystine Hue.

l. 5. Purple Spar, with a Crust of Lead-Ore upon it, a Crust of Mock-Lead upon that, and a Crust of white crystalliz'd Spar without all. From the *Yew-Tree Grove*, two Miles South of *Stanhope*, *Durham*.

l. 6, 7, 8. Out of the same Mine.

l. 9. Blend, or Mock-Lead, with crystalliz'd Spar; from *Cwmystwith Mine*, *Cardiganshire*.

l. 10. A Tubercle of a pale brown Spar, having the exterior Surface cover'd with small polyhedrous Crystals, pellucid, with a Cast of yellow. This was broke off a large Mass, composed of various Tubercles and Bunches; found in the sinking for Lead at *Overton*, *Scarsdale*.

l. 11. Spar of a pale brown Colour, near white; breaking naturally into Angles and Inequalities; or, as they speak in the Country, Snaggs, in such manner as in their Fancy, to resemble the Teeth of a Dog; for which reason they call it *Dog-Tooth-Spar*. 'Tis mention'd by Dr. Merret, in his *Pinax*, p. ---. *Overton*, *Scarsdale*.

l. 12. White Spar, discover'd in sinking a Cellar, in *St. Martins*, in *Stamford*.

l. 13. A Piece of Stone, having upon it two Orders of Spar; the first clear and crystalliz'd; the other with an undulated Surface, incrustated afterwards upon the former, by means of Water gently trickling over and depositing the sparry Particles it carry'd upon it; of which I have seen various Instances in the Quarries of the same Country. From the South-side of *Ebworth-Wood*, near *Painswick*, *Gloucestershire*.

l. 14. A white sparry Incrustation consisting of several Crusts. From *Yew-Tree Grove*, two Miles South of *Stanhope*, *Durham*.

l. 15. A white sparry Incrustation. *Pools-Hole*, in the *Peak*.

l. 16. Spar, white, glossy, and breaking into oblique rhomboid Squares. Out of a Vein of Lead-Ore, in a Mine in the Parish of *Ashover*, *Scarsdale*.

l. 17. Spar, white, and pretty clear; breaking obliquely like that of the Lead-Mines in the *Peak* of *Derbyshire*. From the Duke of *Somerset's* Mines, near *Keswick*, in *Cumberland*.

l. 18. Spar, out of the Mine of *Comb-Martin*, *Devonshire*. The Vein of Spar and Lead, or, as it is call'd, Silver-Ore, is about 8 Inches wide; perpendicular, but shelving, and declines one Foot in three towards the South; it runs near East and West. 'Tis found from near the Day, to 84 Foot in depth. How far further is not known. *Conf* u. 15. *infra*.

l. 19. Spar, striated and fistulose; out of a Quarry upon *Strickland*, *Westmorland*. 'Tis found very commonly, and in great Masses, in the Fissures of the Quarries there.

l. 20.



l. 20. A coarse brown stoney Matter; concreted after the manner of Spar, near the top of the Cliff, 50 Fathom above the Sea. *Caldy-Island*.

l. 21. Fragments of Stone cemented together by the Intervention of sparry Matter. *Portland-Island*. 'Tis not uncommon, both here and elsewhere, to see Fragments of Stone, of all sizes, to the bigness of a Horse's Head, cemented thus together. But the most that ever I saw was in the Cliffs at *Piran-Sands, Cornwall*. I observ'd the like also in *Caldy-Island*. These Stones seem to have been shatter'd antiently, probably at the Deluge; and to have been cemented since.

l. 22. Triangular Spar; from a Lime-stone Quarry, near *Hafswell*, not far from *Easington, Durham*.

l. 23. Spar, shot into small triangular Shoots; out of the Quarry in *Lowther-Garden, Westmorland*.

l. 24. A talky Spar; from the Silver-Mine in *Muggleswick-Park, Durham*.

l. 25. A talky Spar; from a Lime-stone Quarry, near *Sedgfield, Durham*.

l. 26. Moss, incrusted over with Spar; from the Petrefying-Well at *Knaresborough, in Yorkshire*.

l. 27. White Spar, form'd by the dropping of Water, so as somewhat to resemble one sort of Coral. From a Grotto in *Charford-Bottom*, about two Miles from *Stroud, in Gloucestershire*.

l. 28. A coarse, grey, sparry Incrustation; taken up near the *Warm-Bath*, at *Matlock* in the *Peak*. This *Bath* is near the River *Derwent*; is of much the same Tenor of Heat as the *Bath* at *Buxtons*: and began to be used and frequented about the Year 1702. There are Lead-Mines all round that Town.

l. 29. Found in great plenty, by *Stretton-Ardely, near Bissiter, in Oxfordshire*.

l. 30. A Bunch of Rushes, incrusted over with a coarse brown Spar. This Incrustation was made in a running Spring, in the Lordship of *Pitchley*, near that Town, in the Foot-Road to *Kettering*. The Source is pretty large, and the Stream quick. Mr. *Daniel Markes*, who communicated this to me, put it, with Sticks and several other Bodies, into the Rill, at the distance of 200 Yards from the Source, *Jan. 3. 1704*. The very next day he observ'd a slight Precipitation upon the Sticks, over the whole Surface of so much of them as the Water cover'd. *July* the 25th following, he took this Bunch of Rushes forth, so that it had lain in the Spring near seven Months. When first he took it forth, it had a strong lixivious Smell, not unlike that of Lime slaked; which it retain'd for some days. He flung it, with his whole strength, against an hard Stone twice or thrice, without being able to break it. The Rushes being several of them broke, the interior Texture of them appear; and the Laminæ and Shells shew themselves as in the natural Constitution of this Plant.



## S A L T S.

*m. 1.* Vitriol, native; of a pale brown Colour. From - - - -  
in *Wales*. Mr. *Baden*.

*m. 2.* Native Vitriol, green and crystalliz'd; affix'd and concreted on bits of Coal, in an Hollow of a Cannel Coal-pit, at *Haigh* in *Lancashire*. 'Tis compos'd of parallel Fibres, running cross the finall Fissures of the Coal. There was a considerable Quantity of it.

*m. 3.* A bit of *Bast*, a blackish Stone, that lies above and below the Cannel-Coal. It continually attends the Cannel; and the Stratum above and below are each about half a Foot thick. The recent *Bast* has never any the least appearance of Vitriol in it. But this, which they work for Vitriol, is only the Refuse or loose Rubble of the old-wrought Pits. They are dry, and without Water, excepting a slight Humidity, Winter or Summer. *Haigh*, *Lancashire*. They boil the *Bast*, just as raised out of the Pit, about an hour and half, in Leaden Vessels, with River-Water. Drawing it off, they boil it a second time 24 hours, after which they draw it off into Leaden Cisterns, to stand to cool and crystallize to the sides of the Cisterns, and upon Sticks. The *Bast* yields about  $\frac{1}{20}$  or  $\frac{1}{30}$  Vitriol.

*m. 4.* Alum-Rock, the Mineral out of which Alum is extracted. The browner sort. From Mr. *Squire's* Works, at *Black-head*, near *Whitby*, *Yorkshire*.

*m. 5.* Alum-Rock, the grey sort, which I take to abound more in that Mineral than the foregoing. From Mr. *Cholmley's* Works, in the same Neighbourhood.

## P Y R I T Æ.

*n. 1.* An echinated Pyrites, in shape approaching the echinated crystalline Balls; only the pyramidal Shoots are quadrangular. See that described by Dr. *Schenckzer*, *Iter Alpinum*, I. p. 2, 3. *Tab. 1. Fig. 1.* From a Chalk-pit near *Deptford*, on the South-West-side of the Road to *Black-Heath*, near the Foot of the *Heath*. They are very rare.

*n. 2.* Two, somewhat less, join'd. Out of the same Pit. Breaking another of these Bodies, 'twas striated within like the common Pyrites.

*n. 3.* Another larger. Out of a Chalk-pit about half a Mile South-West of *Croydon*, *Surrey*.

*n. 4.* Another, not round, having a kind of flat Basis. Out of the same Chalk-pit.

*n. 5.* Pyrites having the Surface set thick over with quadrilateral pyramidal Shoots; excepting only on one side, to which was conjoin'd a large Agaty-Flint. Chalk-pit on the South-East-side of *Deptford*.

*n. 6.* A Pyrites, the Surface set thick with quadrilateral pyramidal Shoots. 'Tis of a Rust-colour without, but shining and yellow.

low within; and striated. *Sutton, Surrey.* There is in the Center of it a small Mass of Selenites.

n. 7. A Pyrites, beset with quadrilateral Pyramids. From the great Chalk-pit, on the South-side of the Road, just beyond *Depeford.*

n. 8. Another. Found with the foregoing.

n. 9. A Pyrites, found at *Melbury-Abbas*, near *Shaftesbury*, in *Dorsetshire*; where Pyritæ are pretty plentiful at and near the Surface. I broke one of these Pyritæ, and found it brassy and shining within; with Striæ all tending to a Center. On the Shores, somewhere about *Limington*, they collect like Pyritæ; and make Copperas out of them.

n. 10. A Pyrites, with various observable Efflorescencies, and some Crystallizations. Out of Chalk, near *Croydon, Surrey.*

n. 11. Another given me by Mr. *Steel*, who takes the Plate in the middle to be part of a *Pinna Marina*. Found upon plough'd Lands in a Field in *Beckenham-Parish*, near *Langley*, in *Kent*.

n. 12. A Pyrites, hollow; from the great Chalk-pit at the West-end of *Greenhithe*.

n. 13. Another. This has a Mass of black Flint concreted along with it. Breaking of it, I found in the Center a Pyrites moulded in the Shell of an *Echinus cordatus*. The Shell is perish'd; but there remains the Room where the Shell originally was. From the same Chalk-pit.

n. 14. Part of a Pyrites that seems to hold a considerable Quantity of Iron; found amongst some others of like sort in the Road betwixt *Petworth* and *Marlborough*, as I remember, near *Alsford*.

n. 15. Small Pyritæ; found in the Mud of a Rill at *Brinkhill*, near *Alsford*.

n. 16. A slatey Stone, grey, with a Cast of Green; having in it a cubic Pyrites. From *Rydale*, in *Westmorland*.

n. 17. A cubic Pyrites, struck forth of another Piece of the same Stone.

n. 18. *Pyrites aureus tessellatus*, of various sizes, immersed in a sort of Slate, grey, with a Cast of green. There runs thro' it a Vein of white Spar, with an Intermixture of Marcasite, of like Constitution with the Pyrites. From *Kentsmire*, in *Westmorland*. Lord Bishop of *Carlisle*.

n. 19. Part of a Pyrites very elegantly crystalliz'd; from the Sea-shore near *Lime*, in *Dorsetshire*.

#### MARCASITES.

o. 1. A Marcasite. left by the *Old-Men*. That is the Term they give the antient Miners. This was taken out of *Orchard-Mine*, *Comartin, Devonshire*.

o. 2. A Marcasite very curiously crystalliz'd; from *Gamp, Cornwall*. Mr. *Hutchinson*.

o. 3. A grey Stone, having in it numerous small Spangles of a white silvery Talc; and on one Surface are Crystallizations of a yellow golden Marcasite. *Stubbin-Edge*, near *Ashover*, *Scarsdale*.

o. 4. A Marcasite, holding a little Copper, out of a Vein or Load. *St. Columb-major*, *Cornwall*. Deeper in the same Vein was found Lead-Ore.

o. 5. A Piece of Marcasite, out of the Sea-Cliffs near *Cheal*, in the *Isle of Wight*; where there are vast Quantities of it.

o. 6. Mundick, of a bright yellow Colour, and the most shining metallic Complexion of any I ever saw. It is concreted upon a white Spar. *Poldice Tin-Mine*, *Cornwall*.

o. 7. A Marcalite; from a Vein in the Mine of *Comb-Martin*, *Devonshire*.

#### MOCK-LEAD.

p. 1. Mock-Lead, or Blend, found in small Quantities in the Veins of Lead, at *Eskergallid*, in *Montgomeryshire*. Mr. *Harley's* Lead-Mine. They call it *black Jack*. Mock-Lead appears to be a sort of Talc, or talky Spar.

p. 2. Black Talc, from the Strings in *Breay*, *Cornwall*.

p. 3. Blend, or Mock-Lead. Out of a Vein or Load, *St. Colomb-major*, *Cornwall*.

#### MANGANESE.

q. 1. Manganese, out of a Vein in *Charterhouse-Liberty*, *Mendip*. 'Tis found from within two Fathoms of the Surface, down to 28 Fathom. The Vein is from half a Foot to two Foot over. It lies in the manner of the Lead-Ore; of which there is sometimes some found amongst it. Sinking deeper, they now and then light of a Vein of Lead. It has some small Admixture of Iron. Being wash'd, calcin'd, and ground, the Glass-makers run it down with the Ingredients to clear their Glass, by taking off the green Colour; and the Potters use it for the glazing their earthen Ware black: as they do Zaffer for their blue Glazing.

#### CALAMIN.

r. 1. Calamin, out of a Vein. It lies from two to about eight Fathom deep. The Veins from half a Foot to three Foot in Diameter. Underneath they frequently find a Vein of Lead. *Mendip*.

r. 2. Another Sample of the same Vein. This is of Texture very porous and lax; not unlike that of the Pumice, and of some of the *Cornish* Vein-stones. See the *English Catalogue*, Part. 1. *f. 5. & seq.* This Body frequently holds Lead; but I could never obtain any Copper out of it. This has in it some vitriolic Salts, which begin to shoot.

#### SPELTER-ORE.

f. 1. Spelter-Ore, from *Merwin*, near *Padslow*. Mr. *Heydon*. *Confer. 2. 8. infra.*

## C O P P E R - O R E S .

- t. 1. Copper, native, very fine, in thin Plates, amongst white Spar, and a blackish stoney Substance. From --- in *Cornwall*.
- t. 2. Copper-Ore. *Cheshire*. Mr. Brown.
- t. 3. Blue Copper-Ore. *Red-Castle, Shropshire*. Mr. Tenison.
- t. 4. Another sort, gritty, with blue Spar. Mr. Tenison.
- t. 5. Copper-Ore, probably the richest in *England*. Found at *Dodington*, on *Quantock-Hills*, in *Somersetshire*. It is said to yield half Copper. The Mine is but newly open'd, and none discover'd there before.
- t. 6. A Piece of Copper-Ore, appearing to be pretty good. 'Tis of a dusky Copper-Colour, with Veins of green and blue. 'Tis pretty thick set with small Caverns, cross'd by Fibres of a talky Spar, of a bright green Colour. To one Side of it adheres a Mass of blue Lead-Ore. *Ekstone, Staffordshire*. Sir Thomas Aston.
- t. 7. Copper-Ore. *Cheshire*. Mr. Brown.
- t. 8. Green Copper-Ore. *Red-Castle, Shropshire*. Mr. Tenison.
- t. 9. Copper-Ore. *Cheshire*. Mr. Brown.
- t. 10. An Efflorescence of Copper, green; from --- *Austin-Moor, Cumberland*.
- t. 11. Poor Copper. From *Tolvern, Cornwall*. The Spar tinged green.
- t. 12. Spar, very curious; variegated with White, Green, and Blue. The Blue, which is a deep Cyaneus, is crystalliz'd: and the Shoots very nearly approach the Sapphire. There is also a brownish stoney Matter in the Mass; and some Metal, as may be collected by the Weight of the Body. By the blue and green Colours 'tis manifest, that Metal is Copper. From the Duke of *Somerset's* Iron-Mine, near *Egremont, in Cumberland*.
- t. 13. Copper-Ore, black, seeming to be very rich. *Chefwater*, not far from *Truro, Cornwall*. Mr. *Hugh Boscawen's* Mine.
- t. 14. Copper-Ore. *North-Moulton, Devonshire*. 'Tis of the sulphurous Marcasite Kind.
- t. 15. Copper-Ore, holding about  $\frac{1}{3}$  Copper. *Broadwayes-Down*, near *Mendip*.
- t. 16. Copper-Ore. *St. Blazey, Cornwall*.
- t. 17. Lead, and Copper. *Caldbeck, Cumberland*.
- t. 18. Tin, and Copper. *Marsh-Mine, near Ashburnham, Devonshire*.
- t. 19. Copper-Ore, yellow, and shining. *Chefwater*, not far from *Truro, Cornwall*. Mr. *Hugh Boscawen's* Mine.

## L E A D - O R E S .

- u. 1. White, capillary Lead-Ore. From Sir *Chris. Musgrave's* Lead-Mine at *Hartley, in Westmorland*.
- u. 2. Lead-Ore, tuberos, and unequal. It seems to be of that sort that is call'd in *Yorkshire* *Boose-Work*. From a Mine near *Castleton, in the Peak*.

u. 3. Lead-Ore; from *Bonsal Mines*, in the *Peak*, *Derbyshire*, betwixt *Bakewell* and *Worksworth*.

u. 4. Lead-Ore; from *Castleton* in the *Peak*.

u. 5. Blue Lead-Ore, very clean: but glossy, and appearing to be of difficult Fusion. *Ekston*, *Staffordshire*. *Sir Thomas Aston*.

u. 6. Cross-grain'd Lead-Ore. *Keninogg Mine*, in *Cardiganshire*. *Mr. Shears* says it yields  $\frac{1}{2}\frac{1}{2}$  of Lead.

u. 7. Lead-Ore. *Guarnick*, *Cornwall*.

u. 8. Lead-Ore; from *Canninogg*, *Cardiganshire*. The Vein pretended to be 7 Foot and  $\frac{1}{2}$  in Diameter, and 60 Foot deep.

u. 9. The best Potters Lead-Ore of the *Mine-Adventure*, *Wales*. 'Tis of the cross-grain'd Kind: and, in some Parts, has a Gloss of Purple.

u. 10. Broad-grain'd Lead-Ore; from *Sir Humphry Mackworth's Mine*, *North-Wales*. There are in some parts of it Specks of Purple; and of blue, like a sort of Lead-Ore in the *Foreign Catalogue*, p. --- From --- in *Germany*. Lead-Ore with these glaring Colours, is sometimes met with in considerable Quantity in the Mines in the North of *Yorkshire*. It runs difficultly in the Fire; and does not yield so much Lead as other like Ore without these Colours, which probably arise from *Arsenick*.

u. 11. Fine-grain'd, streak'd Lead-Ore. *Peneraigddy Mine*, *Cardiganshire*. *Mr. Shears* says it yields  $\frac{1}{2}\frac{1}{2}$  of Lead; and a Ton of that, 44 Ounces of Silver.

u. 12. Lead-Ore of the Steel-grain'd Kind, striated, and seeming to hold Antimony. From a Mine near *Mam-Tor*, in the *Peak*.

u. 13. Steel-grain'd Lead-Ore, having in several Parts a Gloss of Yellow, and of Purple. From an ancient *Roman Work*, as 'tis commonly believ'd, at *Newton St. Cyres*, near *Exeter*, *Devonshire*. 'Tis now not wrought. This Ore is of difficult Fusion; but holds eighteen Grains of Silver in a Pound of Lead.

u. 14. Steel-grain'd Lead-Ore, very bright, and sparkling. From *Bwlchyr-Eskyrhryr Mine*, *Cardiganshire*. *Mr. Shears* says it holds 13 Ounces in the Ton.

u. 15. *Killus*, with a Vein of Spar, and Silver-Ore affix'd to it. From the Mine of *Cemb-Martin*, *Devonshire*. Conf. l. 18. supra.

u. 16. *Comsomluck Ore*, *Cardiganshire*, an ancient *Roman Work*. It yields  $\frac{1}{2}\frac{1}{2}$  Lead, of which a Ton yields 74 Ounces of Silver.

u. 17. Lead-Ore. *Bwlchyr-Eskyrhryr*, in *Cardiganshire*. This is the grand Mine, formerly *Sir Carbery Price's*.

u. 18. Steel-grain'd Lead-Ore. *Comsomluck Mine*, *Cardiganshire*. *Mr. Shears* says this yields  $\frac{1}{2}\frac{1}{2}$  of Lead; and the Lead yields 72 Ounces of Silver per Ton. This is much more than I have extracted, or heard of from any other Mine: and yet he avers all the Ore of this Vein yields so much Silver one with another. The Lead run out of the Ore got at --- in *Northumberland*, brought to *Newcastle upon Tyne*, and work'd there, yields betwixt 20 or 30 Ounces of Silver in the Ton; which is the richest that I know of in *England*.



u. 19. Grey Lead-Ore, with small Sparks, and some white Spar concreted with it. *Comb-Marten, Devonshire.*

u. 20. Lead-Ore, with larger Sparks, or rather Flakes, seeming to be of talky Constitution. From another Shaft in the same Place.

u. 21. Lead-Ore, very fine, ponderous, and so rich, that in some parts it will cut like Lead. It has a Gloss somewhat resembling that of Talc in some parts: in others, there are Sparks not unlike those in some sorts of native Antimony. The Vein of it is very large. 'Tis in Sir *H. Northcote's* Estate, in the Parish of *Newton*, about three Miles West of *Exeter*. The *Bristol* Smelters give 16*l.* per Ton for it.

u. 22. Lead-Ore. *Blanchland-Fells, Northumberland.*

u. 23. Lead-Ore; from the *Yew-Tree-Grove*, 2 Miles South of *Stanhop, Durham.*

u. 24. A Piece of Stone, having in it Veins of Lead-Ore. Out of a Limestone-Quarry, near *Kello, Durham.*

u. 25. Stone, with Lead-Ore concreted upon it, and Spar upon that. From *Shildon*, near *Blanchland, Northumberland.*

u. 26. Lead-Ore, with Spar; also from *Shildon.*

u. 27. Lead-Ore, holding Silver, incorporated with Spar, white, with a Cast of Green. *Comartin, Devonshire.*

u. 28. A Mass of Lead-Ore. Out of *Eklstone-Mine, Staffordshire.* Sir *Thomas Aston*. 'Tis compos'd partly of blue Lead-Ore, and partly of Copper-Ore. The latter appears, in some parts, like the piped Waxen-Vein, and is yellow and shining: in others 'tis vein'd with green, and with a blue, very bright, and not inferior to that of the *Lapis Lazuli*. On one part is a Mass of a pale brown Spar, somewhat like *Lapis Calaminaris*: and, in Texture, cavernous, fibrous, and much resembling some Sea-Coralline Masses. There seems to be Calamine upon it; and that too very good, and fine.

u. 29. Another Mass, compos'd of Lead-Ore, with Spar, and a stoney Copper-Ore, with Veins of Marcasite. From the same Mine.

u. 30. Lead-Ore, with Mock-Lead, or Blende, and a greenish Marcasite incorporated along with it. From *Caerlion, Monmouthshire.*

u. 31. Lead-Ore, with Marcasite and Blende; out of the Mine *Haugh*, in *K. Christ-Ryshen*, in the *Isle of Man*; near the Cliffs out of which the Lead-Ore, and the Copper, *English Catalogue*, l. 45. & seq. was got.

#### T I N - O R E S.

w. 1. Tin-Ore, with several Tin-Grains in it; from Mr. *Boscawen's* Mine, near *Truro, Cornwall.*

w. 2. Tin-Ore, of the best sort; from *Polgooth, Cornwall.* There are in it several hexangular Crystals, small, but, otherwise, of the

same Constitutions with those commonly call'd in that Country  
*Cornish-Diamonds.*

w. 3. Tin-Ore. *Comartin, Devonshire.*

w. 4. Tin-Ore; from Mr. *Coster's* Work, near *North Moulton, Devonshire.* 'Tis of that sort that, in *Cornwall*, they burn [roast] to drive off the Sulphur.

#### IRON-ORES.

x. 1. *Lapis Hamatites.* From the Duke of *Somerset's* Iron-Mine, near *Egremont*, in *Cumberland.*

x. 2. Iron-Ore, yielding  $\frac{1}{2}$  Iron. *Titchcut, Devonshire.*

x. 3. Iron-Stone. *Hunwich-Moor*, near *Bishop-Aukland, Com. Dunelm.*

x. 4. Iron-Stone; from Mr. *Pitt's* Works, by *Bridgnorth, Shropshire.* It lies in a Strata: some over, but chiefly under Strata of Coal.

x. 5. A Piece of the richest Iron-stone, part of a Stratum, half a Foot in thickness, lying immediately under a Stratum of Coal; of which there are, of one flat, some *Vestigia.* 'Tis of a very dark grey Colour, near black. *Dudley, Staffordshire.*

x. 6. Another Piece of the same Stratum, with a small Nodule, little different in Colour, or Constitution, immers'd in it.

x. 7. Part of a Nodule of somewhat darker Colour, thick set with Veins of white; from the same Mine. This is of the richest of this Ore, which seems to be of the Frame and Constitution of the *Ludus Helmontij*, tho' the Partitions be not so regular as is sometimes observ'd in this Body.

x. 8. Iron-Ore, compos'd of parallel Plates; which, where broken, are very glossy and shining. From ----- near *Truro, Cornwall.*

x. 9. Iron-stone, of a light brown Colour. From Mr. *Baker's* Work, near *Enniscrouch, Sussex.* It yields  $\frac{1}{2}$  Iron. There is a poorer sort that yields about  $\frac{1}{5}$ . This they mingle with the former, to promote its Fusion; and, besides, to absorb the Sulphur, and separate the Slag, they usually put in Lime made of the grey Rag-stone. They run the Ore with Charcoal, in a common Blast-Furnace.

x. 10. A small flat Nodule, of a dusky red Colour, ponderous, and seeming to hold Iron. Found on a plough'd Land near *Brelsford, Scarsdale.* There are of this sort found, plentifully, of all Sizes, to the Bigness of a Man's Fist, betwixt *Higham* and *Sherland*, in *Scarsdale.* Those likewise are commonly of a flat Figure; and are call'd there *Loadstones.* Is there not Mercury in this?

#### *Dubita Incognita.*

y. 1. Impression on a Flint. *Barkhamstead.*

y. 2. An Impression on a Flint. Near *Barkhamstead.*

y. 3. A flinty Pebble, having in it an Hollow, thick set with small Stubs; found near Mr. *Styles's* House at *Langley*, in *Beckenham-Parish,*

Parish, *Kent*. There were several other like Impressions on other Pebles.

y. 4. Out of a Bed of Chalk, in a Pit on *Barkhamstead-Common*, *Hertfordshire*.

y. 5. Out of the same Chalk-pit.

y. 6. A reticular Work, very curious, upon Chalk. Out of a Chalk-pit near *Guildford*, *Surrey*. This seems to be made either by Part of a Sea-Fan, or some other like Coralline Body.

y. 6<sup>x</sup>. A Conical Body, somewhat inflected, having the Surface every where thick set with small *Foramina*: in each of which is placed a small white *Papilla*. At the larger End of it is a conical Cavity, plain and smooth, of about half the Length of the Stone. The Stone is three Inches and a half in Length, and one Inch and a half in Diameter at the larger End. This is parted from another Body that cover'd the Apex, or smaller End of it; the interior Cavity whereof is set with Studs, that seem to have been continuous with those of the exterior. It appears to have been bigger, and perhaps to have cover'd the whole; it being broken, and only a Piece. They were found in a Lime-Kiln of Mr. *Hart's* of *Lullingstone*, in *Kent*: and having passed the Fire, each is a little vitrify'd.

y. 7. A Conic Body, thick set with small Cavities, in a Quincunx Order, but not very regular. 'Tis of Chalk. From a Chalk-pit, near *Guildford*. Dr. *Sheppard*.

y. 8. A Piece of Chalk that was contiguous to the precedent, and has taken the Impression of part of it.

y. 9. Another Body of the same with that y. 7. *supra*. From the same Pit. Dr. *Sheppard*.

y. 9<sup>x</sup>. Another, from a Chalk-pit near *Croydon*, *Surrey*. This, and all the foregoing, y. 6<sup>x</sup>. y. 7. and y. 9. are all inflected a little near the Apex.

y. 9†. A Body of a pale brown Colour, near white, soft and friable, but harder than Chalk, thick set on one side with small Tubercles. Out of a Limestone-Quarry, at *Tunstall*, four Miles from *Sunderland*. Sent by Dr. *Hunter*, who supposes it to be *Astroites Congener Radularia cretacea*, *Luidij*, N<sup>o</sup> 176.

y. 10. A flat flinty Body, thick set with small Studs, placed in a Quincunx Order. Found within 2 Miles of *Uxbridge*, in the Garden at *Denham-Court*.

y. 11. A Body striated externally, and not unlike what is commonly call'd *Petrified Wood*. It is channel'd, and seems to be related to the *Lapis Syringoides*. Found on the Bank of a Pit, near *Wheatly-Bridge*, five Miles from *Oxford*.

y. 12. A Flint, grey, with a Cast of yellow, found in a Field in *Beckenham-Parish*, near *Addington-Common*. There are several Bodies in it, cylindric, but inflected, and flakey or scaley, about  $\frac{1}{4}$  of an Inch in Diameter. Mr. *Steel*, who broke the Stone, which was near as big as a Man's Head, thinks them only parts of the same Body, which he imagines to have been spiral, or in Form

of a Screw. There are also in it Impressions of Fragments of the Shell of the *Pinna-Marina*.

y. 13. A spiral Body, lodg'd in a yellowish Clay-Stone. There were others found in great Numbers; some both larger in Diameter, and likewise of greater Length. There were some above a Foot long. Found amongst the Clay flung forth of a Pit at the *Half-way House* to *Hampstead*, in *Middlesex*. Mr. *Steel*.

y. 14. A Piece of the same Clay-Stone, in which was lodg'd one of the foremention'd Spires, having in it a Vein of talky Spar, after the manner of the *Ludus Helmontij*; of which Kind this Stone is, as I saw by several other Samples of it. *Ibidem*.

y. 15. A Mass of grey Stone, having, in one part, a Cavity in which are several round, long, slender Bodies, appearing not unlike Earth-Worms, lying in several Postures, and being all of them twisted, or inflected. These probably are the *Lapides Vermiculares* of Dr. *Pilot*, *Oxfordshire*, p. 126. Tab. vi. Fig. 13. In the same Cavity are four small oval Bodies, of much the Figure and Bigness of *Luca Olives*. Both these, and the vermicular Bodies, are of much the same Substance and Constitution with that of the Stone in which they are. From a Stone-Pit near *Oxford*; I think, on *Cowley-Common*.

y. 16. An oval Body; from the same Stone-pit, and of the same sort with those in the precedent Stone, but somewhat larger. This lessens gradually at one End, terminating in a kind of Stalk, and has in some Parts of its Surface Ridges, and Striæ, drawn in an irregular manner, and seeming to be form'd after the Body of the Stone, and to be only Accretions upon it.

y. 17. A Stone, having in it like oval Bodies, and a Shell, seeming to be a sort of a *Balanus*. Found in a Stone-pit, at the Bottom of *Shot-over-Hill*, near *Oxford*.

*Bodies that have pass'd the Fire; viz. Slags, Regulus's, Glasses.*

z. 1. Iron-Slag. From the *Forest of Dean*, near *Staunton*. Of this sort there are incredible Quantities, in various parts of the *Forest*. They are Remains of the ancient Works; and hold so much Iron, that they melt them again to good Profit, mixing them only with  $\frac{1}{4}$  of the Iron-stone. Consequently there is, thro' this whole Tract, run down three times as much of these Slags, or Cynders, as they are here call'd, as there is of Iron-Ore. Having been once run before, they melt down again very freely and easily.

z. 2. The Iron as first run, and fit for the Hammering-Forge. From Major *Hanbury's* Works, near *Pontipool*, *Wales*.

z. 3. Iron, struck off the outer Gate of the Castle of *St. Michael's-Mount*, *Cornwall*. 'Tis friable, and very light, its specific Gravity being only  $3\frac{1}{4}$ . 'Twas brought into this Condition by Lightning, 30 or 40 Years ago. Given me by Mr. *Stampeel*, who tells me there is much Iron-Work about the Gate; and most of it in this State.



- z. 4. Bottom-Tin, a *Regulus* of Tin, with Iron.
- z. 5. A *Regulus* of Tin, with Copper.
- z. 6. A porous, friable Body, of a green Colour, like *Erugo*. 'Twas found adhering to the Sides of the Flewes of the Copper Cupoloes, at *Redbrook*.
- z. 7. A Lead-Slag, with a Piece of Charcoal in it. From *Newton St. Cyres, Devonshire*. That Ore is a small-grain'd steely Ore. Reduced to Lead, a Pound yields 16 Grains of Silver. The Ore has much Sulphur in it: and, without previous roasting to carry off the Sulphur, or some other Method to absorb it, the Lead will not quit the Slag. Of which this Slag is a Proof; and an Instance of the Unskilfulness of those that run it; it holding, upon tryal,  $\frac{1}{2}$  Lead. The Ore yields  $\frac{2}{3}$  Lead.
- z. 8. Part of a *Regulus* of the Ore of Spelter, [*f. 1. supra.*] From *Mervin, Cornwall*. Mr. *Heydon*.
- z. 9. A *Regulus* like that of Tin-Glass. Given me by Mr. --- a Sharer in the Antimony-Mines at *Endellion*, who said it was run from a Piece of this *Endellion* Ore.
- z. 10. Glass, pretty opaque, blue, and streak'd with Sky-Colour, in such manner as to resemble the Constitution of the crusted Agats. This Glass, in a Month or two, the Pots seldom lasting longer, sets down to the Bottom of the Pot, used for running the Glass that makes the common green Glass-Bottles: and proceeds only from the Fern-Ashes, employ'd in the making this Glass; for where Straw, or Wood-Ashes are used, what sets to the Bottom is of a green Colour.
- z. 11. Glass made thus, by turning the Punty round as many times as there are Cortices.
- z. 12. Iron-Slag, vitrified, having in it Veins, or rather Cortices incompassing one another, like those in some Parts of Agats. From Mr. *Gott's* Iron-Furnaces at *Horseman-Dean, Kent*. The Agreement in Constitution betwixt the Glasses and Agats, shew there was at least as perfect and thorough a Solution of the Parts of the Agats, before their Formation, as there was of the Glass.
- z. 13. A Slag of *Sussex* Iron-Ore, variegated like the *Lamellar* Agats. From a Forge betwixt *Penshurst* and *Tunbridge-Wells*.
- z. 14. Slag, of a pale blue Colour. From an Iron-Forge in the *Forest of Dean, Gloucestershire*.

#### *Miscellanea Artificialia.*

- aa. 1. A coarse, talky, stoney Spar, adhering to the sides of a Tea-Boyley. *Bridge's* Coffee-House, *Cornhill*.
- aa. 2. Spar of various Kinds, from the Tea-Boylers of *St. Dunstan's* Coffee-House, *Fleetstreet*. Mr. *George* informs me that *Hare-Court-Water* will cast a Crust of half an Inch, in Thickness, upon the Sides of the Boyley, in a Month; whereas the *Thames* and *New-River-Water* will hardly yield any Crust at all.
- aa. 3. A Body, black, round, with small Grain-like Tubercles on the Surface: and not very unlike a Mulberry. It was affix'd to the



the Extremity of one of the Branches of a Sea-Shrub, upon the Top of the Coffee-Room, in *Brown's Coffee-House in Kingstreet, Westminster*. There were several other Bodies, of much the same Shape, and Size, affix'd, in like manner, to the Extremities of several of the other Branches. I took them at first for natural Fruits of that Shrub, till the Coffee-Man assur'd me that, when they were first put up, there were none of them upon it, and that they were all form'd since. Being laid in a Window in Wet-Weather, this began to liquate and run; which has somewhat less'n'd it, and alter'd the Shape of it. It has a fuliginous Taste, with a considerable Pungency. This Coffee-Room is much frequented: and there are generally several Pots and Boylers before the Fire. Out of the Dust that arises, the Steams of the Coffee, and other Liquors, Smoak of Tobacco, and the Halitus from the Breath of the People, these Bodies are form'd. This sets forth something of the Constitution of the Air of a Coffee-House. It may also serve to illustrate the Manner of the Formation of Corals, and other like Bodies, that owe their Origin to a Mechanism, that is accidental, and not to Seed.

aa. 4. Water out of the Hollow of a Canal Coal-pit, at *Haigh, in Lancashire*. 'Tis of a green Colour, with a slight Cast of yellow: and has a pretty strong sour Taste, with an atramentous Smatch. Both the Colour and Taste arise from the Vitriol it has taken up into it. I dissolv'd some of this very Vitriol in common Spring-Water: and it gave it exactly the same Colour and Taste. This may serve to determine the Controversy betwixt Dr. *Lister* and Dr. *Leigh*, concerning this Vitriol, and this Water. This vitriolic Water comes out of an Aperture of about 2 Inches in Diameter.

aa. 5. Vitriol drawn out of the Pyrites, brought from the Lime-Shores in the Copperas-House at *Rotherhitb, Surrey*.

aa. 6. *English* Allum, crystalliz'd after a Solution of it in Water, and boiling. All the Parts shot into Figures like these.

aa. 7. The *Cheshire* Rock-Salt, with a little Nitre, Allum, and Pot-Ash, is the common Flux used for the running the Plate-Glass, or Looking-Glass. Dissolving some of this Flux in Water, boiling, and setting it into Lead-Vessels to shoot, all the Crystals were form'd into angular Figures, placed in Layers one upon another, in such sort, that the upper being gradually less, the whole attain'd a Figure with four equal Sides, pyramidal, and like these two Bodies.

aa. 8. A Piece of Bone, found, on the Surface, in the Current of an Adit of the Copper-Mine, call'd *Gold-Scalp*, in *Newlands, Cumberland*. This may serve to illustrate the Origin of the Turcois Stone. See the *Catalogue of the additional extraneous foreign Fossils*, N<sup>o</sup> 7. 2. 7. 3.

*Marble, wrongly judg'd factitious.*

*bb. 1.* Part of one of those round Pillars that are commonly suppos'd to be fufil Marble: but not truly; this being of the common *Suffex* Marble, full of Sea-Shells. Broke off a Pillar that was fallen down in the Choir of the Cathedral Church of *Rocheſter*, and given me by *Monſieur Miſſion*.

*bb. 2.* Part of another, of the ſame ſort of Stone, but more decay'd, and impair'd by Time. *Monſieur Miſſion*.

*bb. 3.* A Piece of Marble, thick ſet with ſmall Shells; broke off a Pillar in *Ely* Minſter. The People there ſuppoſe it to be factitious.

*Cornish Sea-Sand uſed for Manure.*

*cc. 1.* Fragments of Shells, reduced, by the Agitation of the Sea, to Powder, and uſed for the manuring of Land. Sent by the Name of *Sea-Sand*, from the Shores by *Truro*, *Cornwall*.



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*A CATALOGUE of the Second Addition  
of English extraneous Fossils; viz. Parts  
of Vegetables, and of Animals, digg'd up  
out of the Earth.*

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| 2, 3, &c.                                  |                                      |

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1. VEGETABLE BODIES.

a. 1. **F**Ir-Wood, from the Turf-Grounds, nigh Northholm,  
Northamptonshire.

a. 2. Pine Cones, some young, of the current, others mature,  
of the past Year, in such manner as I have observ'd them on the  
Pine-Tree at the End of May. Out of a Moss, or Peat-Marsh,  
Delamere Forest in Cheshire.

a. 3. Found in a Coal-Grove, near Witton-Gilbert; and sent by  
Dr. Hunter, with the Inscription, *Abietis, aut Pini Ramulus,*  
*cum Foliorum Vestigiis.*

a. 4. Hazle-Nuts, found in digging in a Moss-pit, near Becc-  
ton-Castle, Cheshire. The Deluge came forth at the End of May,  
when Nuts are not ripe. These are in that State. I broke several,  
that were the best preserv'd, and most sound, but found no  
Remains of a Kernel in any: and yet these were somewhat  
larger, and firmer than several of the rest sent. There are fre-  
quently digg'd up, in the Moss-pits, in Cheshire, on Tylston-  
Heath, in the Forest of Delamere, and elsewhere, Oak, Fir, and  
Birch-Trees, Pine-Apples, and Hazle-Nuts, tho' there be no Ha-  
zle-Nut-Trees growing near. Mr. Farrell.

a. 5. This found, with other like round jointed Bodies, in the  
Rocks, on the Shore, about 6 Miles from Tinnmouth, Northum-  
berland.

a. 6. Slate with an *Equisetum* in it. *Broughton Coal-pits, Durham.* Sir George Wheeler.

a. 7. A Cylindric Body, thick set with Hollows, in a quincunx Order; found in the River *Brown*, near *Lanchester*; I think in the County of *Durham*.

a. 8. A dark gritty Stone, full of Talc, having on one Side Remains seeming to be of some Leaf, or vegetable Body, ribb'd; the Ribs thick set with Tubercles; found in the River *Derwent*, at *Shortly-Bridge, Durham*.

a. 9. These 3 sulcated Bodies, from *Brunton Colliery*, about 3 Miles from *Newcastle*. They lie in a sort of black brittle Slate, over the Coal. There are commonly found Leaves of Fern, and of some other Plants, along with these sulcated Bodies, in the same Slate.

a. 10. From Sir Roger *Bradshaigh's Coal-pits at Haigh, in Lancashire*.

## 2. TURBINATA.

b. 1. Ammonites out of a Stone-pit, near *Elsborough, Buckinghamshire*.

b. 2. An Impression of an Ammonita, from *Keynsham* betwixt *Bath* and *Bristol*. There are found, of these Bodies, hereabouts, great Numbers, of various, Kinds, and Sizes. I saw one above 2 Foot in Diameter.

b. 3. An Ammonita, in Stone. *Ibid.*

b. 4. A Segment of an Ammonita. *Ibid.*

b. 5. An Ammonita, found on the plow'd Lands, on the Edge of *Lansdown*, near *Bath*.

b. 6. A Nautilus, *Keddington*, near *Luton, Bedfordshire*, out of a Chalk-pit. 'Twas 22 Inches in Diameter, when whole. There were found various other Shells, chiefly Bivalves: and several other Nautili, in this Chalk-pit.

b. 7. An Impression of the external Surface of a *Cornu Ammonis*, found in *Town Sutton*, 6 Miles from *Maidstone, Kent*.

b. 8. An Impression of a *Cornu Ammonis*, Part of the Shell seeming to be yet remaining. Out of a Clay-pit, at *Boxley*, near *Maidstone, Kent*.

b. 9. A Cylindric Body environ'd with circular Ridges and Furrows alternately. *Ibid.*

b. 10. Two Cylindric Bodies, with annular Sulci, found, with Sharks-Teeth, Ammonitæ, and other Shells, in a light-colour'd Clay, near *Laughton*, in *Bedfordshire*.

b. 11. Ammonites. *Ibid.*

b. 12. A Nautiloides, with the Partitions of the Shell, yet remaining, of a fine pearly Colour. Out of a Clay-pit at *Boxley*, near *Maidstone, Kent*.

b. 13. A Fragment of a Nautilus, digg'd up with the Brick-Clay near *Islington*, along with the Sharks-Teeth.

b. 14. A piece of Stone cast in a very elegant Nautilus; the Shell appearing to have been compress'd by some external Force, before the Stone was harden'd. *Witney, Oxfordshire.*

b. 15. A turbinated Shell, *Richmond, Surrey.*

b. 16. Another. Great Clay-pit, *Richmond, Surrey.*

b. 17. Two vitriolic Pyritæ, cast in Shells, not unlike those in the Catalogue of the English extraneous Fossils, e. 112. Out of the Cliffs of *Sheppey, Kent.*

b. 18. Another of different Shape. *Ibid.*

b. 19. Another of still a different Shape. *Ibid.*

b. 20. *Richmond Clay-pit, Surrey.*

#### BIVALVIA.

c. 1. A large Bivalve, found, on the plow'd Lands, in *Weston Fields*, about a Mile from *Bath*. There are, as usual in the Sea, other lesser Shells, seeming to be of *Balanis*, affix'd to this.

c. 2. A Pecten out of a Stone Quarry at *Melbury-Abbas, Dorsetshire.*

c. 3. Stone cast and moulded in another like Pecten. 'Tis of the same sort with that of the common Mass of the Stratum in which it was found. Out of the same Quarry with the precedent.

c. 4. A Mass of Stone thick set with Ova of Fishes, Fragments of Shells, and having on it a Pecten very fair, intire, and perfect. *Witney Fields, Oxfordshire.*

c. 5. A Pecten. Out of a Chalk-pit, near *Croydon, Surrey.*

c. 6. A Pair of Oyster-Shells; from *Reading, Berkshire.*

c. 7. A Pair of Oyster-Shells, with Part of a *Balanus* adhering to each. From the Sand-pit, beyond *Woolwich.*

c. 8. A Tree-Oyster. *Witney, Oxfordshire.*

c. 9. *Concha rugosa*. Out of a large Stone-pit, near *Bath*. These are found in great Numbers, in the Stone there.

c. 10. A rostrated Bivalve. Found, along with the *Nautiloides*, b. 12. *supra*, in a Clay-pit, at *Boxley*, near *Maidstone*, in *Kent*.

c. 11. Another. Out of a Clay-pit, near *Maidstone, Kent*. Mr. *Drayton*.

c. 12. Four others, found at ----- near *Wilton, Wiltshire*. Lord *Pembroke*.

c. 13. *Conch. Anomia levis*. Chalk-pit near *Gravesend*.

c. 14. Another. Found on the plow'd Lands on the Edge of *Lansdown*, near *Bath*.

c. 15. Another. *Witney, Oxfordshire.*

c. 16. Another; out of a Quarry, near *Melbury-Abbas, Dorsetshire.*

c. 17. *Concha Anomia sulcata*; *Witney, Oxfordshire.*

c. 18. One of this kind from *Mynehead, Somersetshire.*

c. 19. Another, from *Gravesend*.

c. 20. Another, from the Chalk-pit, near *Croydon, Surrey.*



c. 21. Another, from a Chalk-hill, by *Melbury-Abbas*, *Dorsetshire*.

c. 21<sup>x</sup>. Three, found near *Barton*, *Durham*.

c. 22. Two uncommon *Concha Anomia striata*. *Low-Barns*, *Durham*.

c. 23. A single Shell. Out of a Clay-pit, at *Boxley*, near *Maidstone*, *Kent*.

c. 23<sup>x</sup>. Found with *b. 10. supra*.

c. 24. This was found at the Entry of the Grotto, call'd *the Devil's Arse in the Peak*.

c. 25. Two others. *Ibid*.

c. 26. Two. Found in a Quarry, at *Low-Barns*, *Durham*.

c. 27. This Shell, found, among many others, moulder'd out of the Sides of the Grotto, beyond the first Rivulet, in *the Devil's Arse of the Peak*, *Derbyshire*.

c. 28. A Bivalve; found near *Barton*, *Yorkshire*.

c. 29. Another, out of the same Quarry.

c. 30. Another, *Low-Barns*, *Durham*.

c. 31. This was found with *c. 27. supra*.

c. 32. A Stone cast in a Bivalve; *Witney*, *Oxfordshire*.

c. 33. Conchites. Found on the Brow of *Yenson Hill*, in *Hinkfridge* Parish, about 3 Miles from *Milbourn*, *Somersetshire*.

c. 34, 35. Two cast in Bivalves. Found with the preceding.

c. 36. Conchitæ, out of a Slate Quarry, near *Hutton Locris*, about a Mile from *Gisborow*, *Yorkshire*.

c. 37. A Stone, cast in a Bivalve. *Whitby Alum-Works*, *Yorkshire*.

c. 38. Another. *Maidstone*, *Kent*.

c. 39. Three common Cockle-Shells. Out of a Gravel-pit, by *Peakirk*, *Northamptonshire*.

c. 40. A Stone, form'd in a Bivalve. *Wincanton*, *Somersetshire*.

c. 41. Another. *Witney*, *Oxfordshire*.

c. 42. Two Stones, form'd in a sort of Bivalve. Found with *b. 12. supra*.

c. 43. A Stone, form'd in species of that sort of *Pectunculus*, that passes by the Name of *Cuneus*. Out of the same Clay-pit, with *b. 12. supra*.

c. 44. A Bivalve from the Coast of *Yorkshire*, near the Mouth of the River *Tees*.

c. 45. A *Cuneus*, from *Bossal*, *Yorkshire*.

c. 46. A Stone form'd in a Bivalve. *Witney*. 'Tis of that kind call'd by *Dr. Plor*, *Hippocephaloides*.

c. 47. Two Pair of small Muscle Shells; found in a Limestone Quarry, near *Tunstal*, 3 Miles from *Sunderland*.

*Echini: & Corpora affinia.*

d. 1, 2, 3. Three *Echini galeati*. *Greenhithe*.

d. 4. A *Vermiculus*, adhering to the Shell of an *Echinos galeatus*. *Northfleet*.

d. 5. A flinty galeated Echinites. *Downs*, near *Epſom*. The Shell in which it was form'd, is diſappear'd; but, in the room of Part of it, is a kind of a ſemidiaphanous flinty Matter, that ſucceeded the Shell, and concreted upon the Stone.

d. 6. *Echinus pileatus*; Chalk-pit near *Graveſend*.

d. 7. A cordated Echinites, with, either, Part of the Shell remaining, or a flinty Matter concreted in lieu of it. Found among Gravel in the Town of *Harrow*, *Middleſex*.

d. 8. A Species of *Echinus ſpatagus*, very uncommon. *Witney*, *Oxfordſhire*. This has not the Fiſſure, or Sulcus, that thoſe have in the *Catalogue of the Engliſh extraneous Foffils*, Claſs 5.

d. 9. An *Echinus Ovarius*. *Witney*, *Oxfordſhire*.

d. 10. Aculei of ſome ſort of *Echini Ovarij*. *Ibid*.

d. 11. Others, larger. *Ibid*.

d. 12. *Entrochi*; *Holy-Island*, on the Coaſt near *Berwick*; found on the Shores, waſh'd out by the Sea. *Sir George Wheeler*.

d. 13. *Entrochi*: ſome of them found on the Shores near *Holy Island*, others near *Boſſal*, in *Yorkſhire*; call'd there, *St. Cuthbert's-Beads*.

d. 14. *Aſteriæ*; found in the Brook *Nipton*, about  $\frac{1}{2}$  a Quarter of a Mile from a Town of the ſame Name, and 40 Yards below the Bridge. The Place is about a Mile South of *Belvoir Caſtle*, *Lincolnſhire*.

d. 15. Others. *Boſſal*, *Yorkſhire*, 6 Miles from *York*.

#### CRUSTACEA.

e. 1. Theſe Bodies, appearing to be Fragments of the Shell of ſome cruſtaceous Fiſh, found in a bluifh Clay, about 30 Foot deep, in the Tile-Clay-pit, near *Iſlington*.

#### PISCUM PARTES.

f. 1. A Vertebræ of a Fiſh. Found with b. 12. *ſupra*.

#### *Conchylia Maſſæ Saxæ indita.*

g. 1. *Pectines* in Stone. From the Top of an Hill, near 1000 Foot in perpendicular Height, in *Oneberry-Parifh*, not far from *Ludlow*, in *Shropſhire*. The Stone is commonly burnt for Lime; and all of it abounds with theſe Shells.

g. 2. A Muſcle, *Pectines*, and other Shells, in a Maſs of Stone, not fair and plain, but as uſually in this Country, immediately under the Surface at *Hutton-Locris*, near *Giſborough*, *Yorkſhire*. There is Alum-ſtone about 20 Foot underneath.

g. 3. Bivalves in Sand. *Wiltſhire*, Lord *Pembroke*.

g. 4. A ſort of friable Stone, having in it various Shells, very numerous and thick, chiefly Bivalves. Out of *Oxendon Gravel-pit*, *Northamptonſhire*.

g. 5. Stone thick ſet with *Concha Anomia ſtriata*, that have been bruifed and compreſſed. *Witney*, *Oxfordſhire*.

g. 6.

g. 6. A Stone having on it a large Piece of *Corallina reticulata* or Sea-Fan. Out of a Lime-stone Quarry at *Low-Barns*, near *Sunderland*.

g. 7. A Piece of Stone having in it several Pieces of the Sea-Fan, and small Sea-Shells of the Bivalve Kind; out of the same Quarry near *Low-Barns*.

g. 8. Vast Numbers of Shells in Marl. *Hordel-Cliffs, Hampshire*.



# A CATALOGUE of the third Addition of English Native Fossils.

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## *Earths, and Earthy Substances.*

- a. 1. **E**Arth, native, and as taken up. *Lancashire, Sir R. Bradshaw.*
- a. 2. The same sort depurated.
- a. 3. Potters-Earth found in great Quantity on the East-Banks of the River *Medway*, betwixt *Maidstone* and *Rocheſter*; used at *Fox-Hall* for making the common white Pots.
- a. 4. The Clay made use of for the Gally-pots at *Fox-Hall*. 'Tis brought from the Banks of the River *Medway*, on this ſide *Maidſtone, Kent*.
- a. 5. Earth of a deep Ash-colour; from the Brow of an Hill near *Green-Houſe-Lane*, by *Painſwick, Glouceſterſhire*.
- a. 6. Fullers-Earth; out of a Coal-pit, on *Broad-Moor-Green*, near *Little-Dean, Foreſt of Dean, Glouceſterſhire*.
- a. 7. Earth; from an Iron-Mine on the North-ſide of *Little-Dean-Foreſt*.
- a. 8. A browniſh Earth; from an Iron-Mine on the North-ſide of *Little-Dean-Foreſt*.
- a. 9.

a. 9. Earth of a light brown Colour; from the Brow of an Hill near *Green-House-Lane*, by *Painswick*, *Gloucestershire*.

a. 10. A yellowish Earth; from an Hollow-way on the North-side of the *Mine*, near *Little-Dean*, *Forest of Dean*.

a. 11. A whitish Earth; from the same Hollow-way. *Forest of Dean*.

a. 12. Earth of a paleish Colour, near white; from the Top of an Hill near *Little-Dean*, *Forest*.

a. 13. A reddish Earth; from an Iron-Mine on the North-side of *Little-Dean*, *Forest*.

a. 14. Earth of a reddish brown Colour; from the Top of an Hill near *Little-Dean*, *Forest*.

a. 15. The Clay of which the Tiles are made at *Richmond*. It was got on the Hill near the Medical Wells there, by the *Thames-side*. This sort of Clay is found from 3 to 14 or 15 Foot deep, in the Place where they were working. Oct. 15. 1725.

a. 16. This Clay, part brown, and part grey, was taken up about 20 Foot deep, in *Lambs-Conduit-Fields*. 'Tis used by the Brewers for stopping up the Bungs of their Barrels.

a. 17. A dusky, yellowish, ochreous Earth; out of *Yellow-Shroft-Hole*, near *Little-Dean*, *Forest*.

a. 18. Yellow ochreous Earth; *Isle of Man*, Lord *Derby*.

a. 19. Yellowish ochreous Earth; *Isle of Wight*.

a. 20. Ochreous Earth, of a red Colour, somewhat approaching a Pink; *Isle of Wight*.

a. 21. *Elven-Clay*, *Cornwall*.

a. 22. Found in a small Cavity, in the middle of a grey Flint, in Major General *Pepper's* Garden, *Enfield-Chace*. There were in this Flint three other like Cavities, with like Matter in them. The Cavities had no Communication with each other, nor Passage out.

a. 23. Clay-Stone; from *Twiford*, near *Shaftesbury*, *Dorsetshire*: taken up about 80 Foot deep in sinking for Coal. It burns, tho' slowly, and emits a strong sulphurous Smell.

a. 24. Chiver; from the Coal-pits on *Broad-Moor-Green*, near *Little-Dean*, *Forest*.

a. 25. Chalk; out of a Chalk-pit, near *Pharey*, betwixt *Newberry* and *Hungerford*.

#### S A N D S.

a. 26. Sand, white; *Berstead*, *Kent*.

a. 27. Sand, pale, near white; *Goonlace*, *St. Agnes*, *Cornwall*.

a. 28. Sand, of a very pale brown Colour; *Hollingbourn*, *Kent*.

a. 29. Sand, grey, with a Cast of green; *St. Stephen's*, near *Canterbury*.

a. 30. Sand, out of a Sand-pit near *Fale*, betwixt *Newberry* and *Reading*.

a. 31. Sand, out of a Pit on *Knowl-Hill*, about two Miles on this side *Twiford*, *Berkshire*.



a. 32. Sand, of a bright brown Colour, with Sparks of Talc among it; from a Gravel-pit near the Bowling-Green, *Hampstead-Heath*. April 2. 1716.

a. 33. Reddish Sand, found, for near two Miles an end, in a waved Layer of about an Inch thick, in *Moreham's-Court-Hill*, near *Seven-Oak, Kent*. It lies so shallow, that the Carriages turn up and discover it.

a. 34. A reddish gritty Sand; from the same Hollow with the Earth, a. 10. *supra*. *Forest of Dean, Gloucestershire*.

a. 35. Sand, of a pale red Colour, approaching a Pink; *Isle of Wight*.

a. 36. A reddish brown Sand; from the *Isle of Wight*.

a. 37. This, and the 16 Samples of Sand that follow, to N<sup>o</sup> a. 53. inclusive, some coarser, others finer, of very different Colours, and shewing in them some extremely fine Fragments of a white silvery Talc, and others of Spar, were taken out of several Layers of a large Bank near *Sandling in Boxley-Parish, Kent*. Mr. *Drayton*. At the Departure of the Water, at the end of the Deluge, great Quantities of the uppermost parts of the Globe, were born off, and with it sometimes a very great way; and in the Hurry and Agitation of the Water, Bodies, hard, were wash'd, clear'd and separated from the soft Sand and Pebles, from Clay and Earth: and so projected and cast into Layers, as the Water, becoming more quiet, deserted them. 'Twas owing to this Action of the Water that the Sand and Gravel, now found near the Surface of the Earth, were clear'd, separated and cast into Layers, as we now find them; these shewing plainly that they owe their Compilation to such an Hurry and Action of the Water, and not to a regular Settlement made, according to the Laws of Gravity, from a Water quiet and stagnant, as the regular original Strata all round the Globe did. The Force of the Water departing was so great in some parts, as to tear up even the Strata of the most firm and solid Stone, bear away vast Masses of it, beat them to pieces, and sometimes reduce them even to a very small Grit; such as is a great deal of that which we now call Sand, and find thus cast into Layers. Other sorts of Sands there are that consist, some of broken Marble, others of Spar, Talc, and the like. Much of the Sand about *London* consists entirely of extremely small Pebles. But of this Action of the Water, more in its place.

a. 38. *Sandling, Kent*.

a. 39. *Ibid*.

a. 40. *Ibid*.

a. 41. *Ibid*.

a. 42. *Ibid*.

a. 43. *Ibid*.

a. 44. *Ibid*.

a. 45. *Ibid*.

a. 46. *Ibid*.

a. 47. *Ibid*.

a. 48. *Ibid*.

a. 49. *Ibid*.

a. 50. *Ibid*.

a. 51. *Ibid*.

a. 52. *Ibid*.

a. 53. *Ibid*.

#### *Stone of Strata.*

b. 1. *Elvin-Stone. Stithians, Cornwall*.

b. 2. Stone, having in it small Pebles, part of a Stratum; out of a Stone-pit by *Sandy-Lane*, midway betwixt *Bath* and *Marlborough*.

Some

Some Strata that I observ'd here, were made up of extreme small Pebbles, such as pass ordinarily by the Name of Sand; and of such Strata, dissolv'd, the Sand in the *Lane* consists.

*b. 3.* Part of one of the thin Strata of Iron-stone; found in the Cliffs near the *Hot-Well, Bristol*. This is mention'd in the Account of those Cliffs.

*b. 4, 5, 6, 7.* Plates, or thin Strata of Stone, used as Slate, for covering the Houses at and about *Bath*. These were taken out of the Slate-Quarries, in *Charlwood*, in the Parish of *Box*, about five Miles from *Bath*, and about a Mile from *London Road*. They lay each under other, in the Order as they are number'd here, the thinnest uppermost.

*b. 8.* Slate of the same sort, out of a Quarry near the former. This has a thin Crust of reddish Spar on its Surface.

*b. 9.* Slate out of the side of a deep Hollow'd-Way, in *Bath Road*, betwixt *Box* and *Causum*. This has concreted on one Surface a thin Crust of a brownish Spar.

*b. 10.* Part of a thin Stratum, found on the plough'd Lands by *Clarken-Down*. I observ'd the uppermost Strata in several parts of these *Downs*, and of *Lansdown*, and other Places about *Bath*, were thus thin, and of much the like Constitution with this.

*b. 11.* A grey Stone with efflorescent Tubera, seeming to have been originally in a Cavity of it. From - - - - - near *Maidstone, in Kent*.

*b. 12.* Callus. *Goonlace, St. Agnes, Cornwall*.

*b. 13.* Blue Slate. *St. Germans, Cornwall*.

*b. 14.* Stone, in thin Plates, of a dusky blackish Colour, out of a Coal-pit on *Broad-More-Green*, near *Little-Dean, Forest*.

*b. 15.* Red Slate. *St. Agnes, Goonlace, Cornwall*.

*b. 16.* A Stone, purple, spotted with small Masses of white Spar interposed; from the Shores of *Sunderland*. This, tho' in the form of a Peble, is not one, having no exterior investient Crust; but a Fragment broken off a Stratum, worn round and smooth'd, by the Water of the Deluge, departing, and hastening to the Sea, and the Apertures of the great Abyss at the bottom of it. *Conf. a. 37. supra.*

*b. 17.* Another. *Ibid.*

*b. 18.* A kind of Marble Mass, beat off, rounded, and smooth'd in like manner; found on the plough'd Lands near *Warwick*, where such are common.

*b. 19.* A sparry Mass, somewhat transparent, so rounded. This sort is call'd a Water-Peble. *Witney, Oxfordshire*.

#### *Pebbles, Flints.*

*c. 1.* A grey Peble plated and striped. *Beckenham, Kent*.

*c. 2.* Another; East-side of *Hyde-Park*. This has a Hole bored through it; and perhaps has been worn as a Jewel.

*c. 3.* Another, brown, plated and striped. Gravel-pit, *St. James's Park*,

- c. 4. A flinty Pebble variegated. Top of *Shooters-Hill, Kent*.
- c. 5. A flinty Pebble, incircled with two Ridges, and two Furrows. Found in Gravel, in the Road a little beyond *Lewissham, in Kent*.
- c. 6. A coarse Flint, with circular Ridges and Channels alternately; from the Shores, near - - - - *Cornwall*.
- c. 7. A flinty Pebble; found at *Stratford, near Bow, Essex*. Mr. *Clarke*, who gave it me, fancy'd it to resemble a Walnut.
- c. 8. A small Flint with an Hollow, having in it various Ridges, tending all from the Center of it to the Circumference. *Lullingstone-Park, near Ainsford, in Kent*.
- c. 9. Flint with an Armature on it, but much faded by long Carriage; from a Rivulet near *Hoxney, in Norfolk*. All the Flints in the Rivulet are so gilded.
- c. 10. A grey Flint; found near *Beckenham in Kent*. There jets out of one side of it a conical Body, of about an Inch in length, resembling a small Belemnites; but of a different Constitution, it consisting of the same Sort of Matter with the Flint: and being indeed continuous with it. There is all round the whole Beginning, or Rise of it, an hollow betwixt the Body and the Flint, seeming to shew that it was form'd in a Conic Shell.
- c. 11. A grey Flint having the Surface unequal, and appearing as chipp'd. *Witney, Oxfordshire*.
- c. 12. Another. *Ibid*.
- c. 13. A Body, soft, cretaceous, and that easily cuts with a Knife; found in a blueish Clay, about 30 Foot deep, in the Tile-Clay-pit, near *Islington, Middlesex*. It seems to be only an harder Sort of Chalk born off, and rounded by the Water of the Deluge departing [*Confer. a. 37. supra.*] It has no investient Coat, which is the Case of many of those commonly call'd *Pebbles*; but is externally rough'd, exactly in manner of some of them.
- c. 14. Another. *Ibid*.
- c. 15. A Nodule, found on the Shores of *Sheppey, Kent*, greenish, and seeming to have been, only a Bit of broken Glass; but with the Surface roughed, after the Manner of some Pebbles; which raises a Suspicion in me, that some of them were only Fragments of hard Strata, broke off, and rough'd on their Surfaces by the Motion of the Water, returning towards the Sea, and the Apertures of the Abyss, in the Conclusion of the Deluge. *Confer. a. 37. supra.*

## ÆTITES GEODES.

- d. 1. A small flinty Ætites, found in a Gravel-pit, at *Bealing, near Woodbridge, Suffolk*.
- d. 2. A Geodes, of an orbicular Shape, near 3 Inches in Diameter, the exterior Crust of Flint, fill'd with a pale brown cretaceous Powder, Part of it concreted in a Calimus, from *Elsborough, Buckinghamshire*.

d. 3. Another, larger, and of somewhat more compress'd Shape. The Crust is of Iron Stone, with which there are small Pebbles, and Grit, incorporated. 'Twas fill'd with the like, and a little yellow Ochre. From *Moofal-Hill*, near *Normich*.

#### TALKY BODIES.

e. 1. *Mica Argentea*, a white flakey Talc, out of *Newcastle* Coal. It has pass'd the Fire.

e. 2. *Mica*, or Spangles of a white silvery Talc, in a yellowish Sand-stone, from a Gravel-pit on *Hampstead-Heath*.

e. 3. A white sparry Stone, thick set, partly with a black, partly with a white silvery *Mica* or Talc. 'Tis commonly call'd *Moor-Stone*. From ----- *Cornwall*.

e. 4. Another, with like Talc in it. From the River *Derwent*, *Durham*.

e. 5. A brown Stone, thick set with small Spangles of a yellow or golden Talc. *Miller Parish*, *Cornwall*.

e. 6. *Asbestos*, *Anglesey*.

*Mr. Gadlis's Account of the Asbestos in Anglesey.*

The *Asbestos* in *Anglesey*, stands like a small Skin or Rib between two Rocks of Marble of various Colours, chiefly light and dark green, interspers'd with small Streaks of white. The thickest Rib of it, we ever saw, was between  $\frac{1}{10}$  and  $\frac{4}{10}$  of an Inch broad, and the Length of the Wool or Thread, is the cross-way of the Vein or Rib, no more than  $\frac{4}{10}$  of an Inch long any where, and much the greatest Part of it not above half that Length. So that we found it too difficult for us, either to draw; as the Flatters do their Furrs, or to spin it like Flax. The best Use we make of it is in coarse sort of Paper; which I believe with proper Application, might be brought to a tolerable Perfection. This *Asbestos* seems to be of a different sort from that mention'd by *A. Kircher*, in his Description of *China*, which he says, put into Water, moulders like Clay, and is suddenly consum'd, and that it is a fibrous small Excrecence, like Hairs growing upon the Stones, and for the hatchelling, spinning, and weaving it, he refers to his *Mundus subterraneus*, Lib. 12.

e. 7. *Linum Asbestinum*, pick'd out of Cliffs of Rocks, in *Anglesey*.

e. 8. White, striated, or fibrous Talc. *Witney*, *Oxfordshire*.

#### *Ludus Helmontij.*

f. 1. *Ludus Helmontij*, found in digging for the purging Spring, on *Shooters Hill*, *Kent*. There was found also the *Selenites rhomboidalis*: and the Workmen ascribe the purging Quality of the Waters to these. But both are likewise found, plentifully, in the Tile Clay-pits in several Parts of the Hill.

f. 2. *Ludus Helmontij*. *Hordel* Cliffs, *Hampshire*.



f. 3. *Ludus Helmontij*, soft as Clay, when first taken up; with Partitions of a Talky Spar. Out of the great Tile-Clay-pit, *Richmond, Surrey*.

*Lapis Syringoides*.

g. 1. *Lapis Syringoides*. Great Gravel-pit, beyond *Woolwich, Kent*.

g. 2. Another. *Maidstone, Kent*.

RHOMBOIDAL SELENITÆ.

h. 1. Many small rhomboidal Selenitæ, found in Clay, near *Long Crendon, Buckinghamshire*.

h. 2. Two small rhomboidal Selenitæ, found, with others in great Numbers, in a Marl-pit, at *Bittenden*, in the *Wild of Kent*. *Mr. Drayton*.

h. 3. Talc, of the Nature of the Selenites. Brick-Clay-pit, near *Islington, Middlesex*.

BELEMNITÆ.

i. 1. A Belemnites, with the Alum Mineral in the Hollow of it. *Whitby Alum Works, Yorkshire*.

i. 2. *Belemnites fusiformes*; some of them near transparent. Found in a Bed of Clay, of a pale Colour, near *Laighton, Bedfordshire*.

i. 3. Two other Bodies, tapering, and somewhat inflected, found, as were also Sea-Shells, and Sharks-Teeth, in the same Clay.

FOSSIL CORALLOID BODIES.

k. 1. A white sparry coralloid Body more branch'd than the Fossil Corals usually are. Chalk-pit near *Croydon, Surrey*.

k. 2. *Lapides ramosi coralloides*; out of a Quarry near *Witney, Oxfordshire*.

k. 3. A Mass of Stone having in it numerous coralloid Bodies of that sort, call'd by the Writers of Fossils, *Stelichites*; found in the River *Tees*, near *Blackwell, Durham*.

k. 4. A Mycetites of a conoid Form but somewhat inflected, out of a Lime-stone Quarry, near *Middleton Fryars, Yorkshire*. Sent by *Dr. Hunter*, with the Name of *Branchialis congener columellus striatus*. *S. Bryonia Radix lapidea Plotij, Luidij, Lythophylac.* N<sup>o</sup> 120. p. 7.

k. 4<sup>x</sup>. A coralloid Fungus, having *Astroites*, on the Surface, at the Top of it. Found in a Gravel-pit, near *Curbridge*, by *Witney, Oxfordshire*.

k. 5. An *Astroites*, consisting of a very firm close Spar. *Witney, Oxfordshire*.

k. 6. Another. *Ibid.*



*Fluores, or Spars: and Crystals.*

l. 1. A coarse Concretion, partly sparry, but chiefly earthy. Out of *Rosamond's-Well*, in *Woodstock Park, Oxfordshire*.

l. 2. Spar, found adhering to the Stone on one Side of a Fissure in a Stone-pit, near *Witney, Oxfordshire*. 'Twas wetted, by Water gliding over it, by which the sparry Matter was brought, and successively cast and incrustated on the Stone.

l. 3. Spar, white, with a Cast of Yellow. It consists of a Crust, from which several fistulose Stalactitæ proceed. Out of a Quarry, near *Witney, Oxfordshire*. This Crust adhered to the Stone, at the Top of a small Grotto, in the Side of a Fissure. From the Crust the Stalactitæ were depending, and Water continually dropping.

l. 4. A Stalactites, with a Cavity perforating it at the Axis. Found in the first Rivulet in the Grotto call'd *The Devil's Arse in the Peak*.

l. 5. A yellowish Spar, run into Tubercles, having their Surface thick set all over with very small Crystals. Out of the Fissure of a Rock near *Easington, Durham*. Dr. Hunter.

l. 6. Spar, clear, transparent, and crystalliz'd into hexangular Shoots. Lead-Mine. *Durham*.

l. 7. Crystal Shoots, hexagonal, and very fair, but white and not so pellucid as the finest Crystal. *Goonlace Tin-Work, St. Agnes Parish, Cornwall*.

l. 8. Crystals, hexagonal, but brown, dusky, and not transparent. Found in a Tin-Vein at *Carrack-Gloose, Cornwall*.

l. 9. An echinated crystalline Ball, or small Nodule, close set, all round, with hexagonal crystalline pyramidal Shoots, pellucid, but with a Cast of yellow. *King's Weston, Gloucestershire*. Sir Robert Southwell.

## BITUMINOUS BODIES.

m. 1. Coal, out of *Seridge Coal-pits, Gloucestershire*.

m. 2. Coal, from the Pits of *Broad-Moor-Green, near Little Dean*. Forest of Dean.

m. 3. Petroleum, or Stone-pitch, from off the Well at *Pitchford in Shropshire*.

m. 4. Stone, resembling charr'd Coal, found in the River *Brown*, near *Lanchester, Durham*.

m. 5. Earth inflammable, emitting an Electric-Smell. 'Tis us'd instead of Candles, for Light, and lies near the Surface, on the Side of a Peat Marsh, in *Lady Mohun's Estate, near Ormskirk, Lancashire*. There are, as in other Peat-Earth, numerous vegetable Bodies in it.

m. 6. Amber, from the Shores of *Norfolk*.

m. 7. Amber, Fossil, from *Islington, Mr. Scot's Ground*; found 30 Foot deep. 'Tis found commonly in Form of a Cake, lessening towards the Edges. 'Tis strongly electric.

## PYRITÆ, MARCASITÆ.

- n. 1. A Pyrites, found on the Chalk-Hills, 2 Mile above *Newhaven*, in *Suffex*.  
 n. 2. A Pyrites of a cylindric Form, hollow, and having in it a soft light-black Powder. Cliffs of *Sheppey*, *Kent*.  
 n. 3. Part of the black Powder taken out of it.  
 n. 4. Marcasite. Out of the Cliffs of *Sheppey* Island, *Kent*.  
 n. 5. Another. Out of the Cliffs of *Severn*, near *Westbury*, *Gloucestershire*.  
 n. 6. *Mundick*, *Chefwater*, *Kenwyn*, *Cornwall*.

*Lapis Calaminaris.*

- o. 1. *Lapis Calaminaris*; from a New-work, at *East Hartrey*, *Mendip*, *Somersetshire*.  
 o. 2. Calamin, found, in Quantity, betwixt *Criche* and *Worksworth*, in the *Peak*. 'Tis rather better than that of *Mendip*.  
 o. 3. Calamin, with some Sparks of Lead incorporated with it. From *Derbyshire*. *Mr. Aston*.  
 o. 4. *Lapis Calaminaris*. *Peak* of *Derbyshire*. *Mr. Robinson*.  
 o. 5. *Lapis Calaminaris*. *Ibid.* o. 6. *Ibid.*  
 o. 7. *Ibidem.* o. 8. *Ibidem.*  
 o. 9. *Ibidem.* o. 10. *Ibidem.*

## COPPER ORES.

- p. 1. Sulphurous Copper-Ore, *Kenwyn*, *Chefwater*, *Cornwall*.  
 p. 2. Copper-Ore. From *St. Just*, *Cornwall*. *Mr. Ustick*.  
 p. 3. A crystalliz'd Marcasite, found in an Hollow of a Piece of Copper-Ore, partly green, partly sulphurous. Such are frequent in this Ore. *Isle of Man*. *Lord Derby*.  
 p. 4. Like Copper-Ore, with a Cubic Marcasite in it. Out of the same Mine. *Isle of Man*. *Lord Derby*.  
 p. 5. A dusky green Copper-Ore. *Blue-Work*, *Redruth*, *Cornwall*.  
 p. 6. A dusky green Copper-Ore, out of a Mine, near *Overstoe*y, on *Quantock-Hills*, *Somersetshire*.  
 p. 7. Copper-Ore, partly blue, partly of a dusky sulphurous. Said to be rich. *Mr. Townen's-Work*, by *Redruth*, *Cornwall*.  
 p. 8. Copper-Ore very sparkling; having in it native Copper. *Poldice*, *Cornwall*.  
 p. 9. Copper-Ore, with some little native Copper, flexible, and malleable: Copper crystalliz'd; with small Chips of a grey Stone, a little white Spar: and some things very like small Concretions of Iron. *Wheel-Wedden-Key*, *Cornwall*.  
 p. 10. Native Copper, *Poldice*, *Gwenup*, *Cornwall*.  
 p. 11. Native Copper; *Isle of Man*.

## T I N - O R E S.

- q. 1. Tin-Ore. *Bessô, Wheal-fatt, Gwenup, Cornwall.*
- q. 2. Tin-Ore. *Cheswater, Kenwyn, Cornwall.*
- q. 3. Tin-Ore, rich. *Gwenup, Lannar, Cornwall.*
- q. 4. Tin-Ore, very rich. *St. Agnes, Cornwall.*
- q. 5. Tin-Ore. *Pelbreen, St. Agnes, Cornwall.*
- q. 6. Tin-Ore. *Wheal-Vean, Gwenup, Cornwall.*
- q. 7. Tin-Ore. *St. Agnes, Cornwall.*
- q. 8. Tin-Ore, with crystalliz'd Spar. *Gwenup, Minear, Cornwall.*
- q. 9. Tin-Grains, and Spar, form'd on the [Country, or] common Stone, on the side of the Vein. *Wal, near Guinear, Cornwall.*
- q. 10. Tin-Ore, with several Cavities in it; wherein are crystalliz'd Spar, 2 or 3 very small *Cornish* Diamonds, and very numerous small Tin-Grains. Out of a Vein of a Cliff, to the Sea, *St. Agnes, Cornwall.*
- q. 11. Tin-Grains. *Cambren, Cornwall.*
- q. 12. Tin-Grains. They yield  $\frac{2}{3}$  Tin. *St. Agnes, Cornwall.*  
There is white Spar incorporated with the Tin-Grains.
- q. 13. Tin-Grains. *Cleggo, Perran-Sands.*
- q. 14. Tin-Ore, dress'd, for smelting; the Tinnerns call it *Black-Tin.* *Cornwall.*
- q. 15. Another sort, not so sparkling as the precedent. *Ibid.*
- q. 16. Another sort, of a reddish brown. *Ibid.*
- q. 17. Another sort, of a lighter Colour. *Ibid.*

## L E A D - O R E S.

- r. 1. Blue, or Potters Lead-Ore, with a little white Spar intermix'd. The two opposite Flats, or Sides, are smooth and unbroke; so that this Piece pass'd from side to side of the Vein: and shews its Breadth to be above two Inches. *Isle of Man. Lord Derby.*
- r. 2. Lead-Ore. *Trevascus, Gwinyr, Cornwall.*
- r. 3. Lead-Ore. *Gwinyr, Relistian, Cornwall.*
- r. 4. Lead-Ore, sparkling. The opposite Flats shew the Breadth of the Vein. *Isle of Man. Lord Derby.*
- r. 5. Lead-Ore, more sparkling. *Perran-Sands, Cornwall.*
- r. 6. A Piece of a grey talky Stone, being the Side of a perpendicular Fissure, having on it a Vein of Lead-Ore, and of a white Spar, shot into very small Crystals. From a Lead-Mine near *Blanchland, Northumberland.*
- r. 7. Spar, crystalliz'd, with a Mass of Lead-Ore incorporated with it. *Ibid.*
- r. 8. Spar, crystalliz'd, of a yellowish Colour, holding in it likewise Masses of a purple Spar, and two small Masses of Lead-Ore. *Bishoprick of Durham.*

## IRON-ORES.

f. 1. Samples of a Stratum of Iron-stone Ore, thick set with Entrochi, and Sea-Shells, and rich in Iron. 'Tis somewhat above two Foot thick: and crops out, at the Day, on the North-side of *Little-Dean*. From this Cropping, it dips into the Hill a great Depth. There is on one Piece of it, a Sample of the Spar, rich in Iron. This Spar was found on the Side of a Fissure.

f. 2. Iron-Ore, very rich, found, in great Quantity, over the Coal, at *Broseley*, in *Shropshire*.

f. 3. Iron-Ore. *Perran-Sands*, *Cornwall*.

f. 4. Iron-Ore, found, at the Surface, on *Quantock-Hills*, near *Upper-Stoey*, about 6 Miles West of *Bridgwater*, *Somersetshire*. 'Tis found in great Quantities, tho' there be no Mine wrought, or Forge.

### *A Third Addition of English Extraneous FOSSILS.*

a. 1. A large Bone, found among Rubble, about 14 Foot deep, above the Slate, in a Quarry near *Stunsfield*, *Oxfordshire*.

a. 2. Two Pieces of Bone, out of the Rubble of another Quarry, near the former.

a. 3. Another Piece, from a neighbouring Quarry. The outer Part of this is now Spar. There are numerous Bones found in the Rubble over several of these Quarries.

a. 4. *Siliquastra*, and four other Bodies; found in the Substance of the Rubble-Stones\*, over the Slate of the same Quarries. *Stunsfield*. The *Bufo-nita* are found in the same Stones; as also the *Pletronita*.

a. 5. Two *Pletronita*, lying in Pieces of Rubble-Stone that lay over another of these Slate Quarries. *Stunsfield*.

a. 6. This Body seems to be Part of a Jaw paved with grinder Teeth, related to the *Bufo-nita*. Out of the Rubble-Stone, over a Slate-Quarry. *Stunsfield*.

\* These thin Strata of Slate were, doubtless, the Top of the original stoney Subjidence at the Deluge. There might be earthy, chalky, or other lighter Matter above, that might be washed away, and carried thence by the departing Water of the Deluge: But the Rubble-Stones, in which these *Siliquastra*, and other Marine Bodies are found, many of which Stones are very large, and of great weight, were brought from elsewhere, and cast and left here by the same Water departing; which, from many Observations that I have made, appears to have made great Changes and Transpositions of the first Settlement at and near the Surface of the Earth.



a. 7. *Strombites*, very thick, and numerous, in Stone. Out of the Quarry near *Witney Town End*, *Oxfordshire*.

a. 8. A Piece of common Slate, out of a Quarry near *Stunfield*. There are in it Impressions of Bivalves, chiefly in Pairs, opened and expanded. These are chiefly of one Species; but I observ'd of other Species in the same Slate.

a. 9. An *Ammonites*, with its Impression on part of the Mass of Stone in which it was found, in *Hasteford Quarry*, near *Barlington*, *Oxfordshire*.

a. 10. *Echinites*, found, in sinking a Well, in *Witney*, *Oxfordshire*.

a. 11. Two *Concha Anomia*, found in a Quarry by *Hamborow*, near *Woodstock*, *Oxfordshire*.

a. 12. Two Scales, said to be of the Sword-Fish, found in the midst of a large Piece of hard Rubble-Stone, about 12 Foot deep, over a Slate-Quarry, near *Stunfield*. Mr. *Smith*. He never saw any of these in any other Place. I saw the Piece off which these were broke. 'Twas extended, in a Plane, for near a Foot every way.

a. 13. A Piece of Rubble-stone, out of the same Quarry, having on it the Impression of the Skin, cover'd with Scales, of a Fish of the same kind.

a. 14. The upper Jaw of some Marine Animal, found 24 Foot deep, in a Quarry in the Estate of Sir *Thomas Read*, at *Shipton*, in *Oxfordshire*. 'Twas, when first found, near 2 Foot 2 Inches long. 'Tis now in two Pieces; and there was a third, which was the Snout or Termination, and is lost. It was not acute as commonly the Beak of a Bird is, but obtuse, like the Snout of an Hog.

a. 15. Two Pieces of the under Jaw of the same Animal, found together with the other. As along each side of that is a Row of Teeth, so is there likewise in the lower Jaw corresponding to those. The Quarry-Man, who found the Jaws, foolishly broke the Teeth off both. But, by some Remains yet behind in the lower Jaw, it appears that they were of that sort call'd *Plectronites*; which indeed I observ'd to be a boney Substance, and always judg'd they serv'd for Teeth.

a. 16. An *Echinus Spatagus Cordiformis*. *Darkin*, *Kent*.

a. 17. An *Echinus*, found on the Side of an Hollow-Way, near *Fulbrook*, *Oxfordshire*. See Dr. *Plot's Account* of this Body. *Nat. Hist. Oxfordshire*, Cap. 5. §. 30, 31, 32. He has an Icon of it, *ibid*. Tab. 2. Fig. 9, 10.

a. 18. Shells, in Stone, some few turbinated, but chiefly Bivalves, very numerous and thick, of the same sort with those found in Stone, at *Stifford*, in *Effex*; at *Woolwich*, in *Kent*; and on various parts of *Black-Heath*. Found in *Moor-Park*, on occasion of digging for making the Level near Mr. *Stiles's House*.

a. 19. Sand, having in it great Numbers of the *Cochlea vivipara fluviatilis Listeri*. Digg'd out of *Hordel-Cliffs*, *Hampshire*.



a. 20. Numerous other Shells, chiefly Bivalves, in Marl; from the same Cliffs.

a. 21. Others, chiefly turbinated, in Clay; from the same Cliff.

a. 22. A Pair of Scallop-Shells, somewhat distanc'd, with the common black Flint interpos'd in such sort, as to hold them together. Found at *Reads-Rest*, near *Banstead*, *Surrey*.

a. 23. A galeated Echinite, of Flint, very fair, and perfect; found in a Field near *Woodstock-Park*, *Oxfordshire*.

a. 24. A small *Nautilus Gracorum*, Part of the exterior *Voluta* remaining, and the Edges of the Diaphragms, or Partitions, all of a fine shining pearly Hue, and Constitution. The Intervals of the Partitions are fill'd with the *Pyrites*. Out of the great Clay-Pit, near *Richmond*, *Surrey*.







A  
CATALOGUE  
OF THE  
FOREIGN FOSSILS

In the COLLECTION of

J. WOODWARD M. D.

Brought as well from several Parts of *Asia*,  
*Africa*, and *America*; as from *Sweden*,  
*Germany*, *Hungary*, and other Parts of  
*Europe*.

With a Characteristick Description, and Historical  
Account of each; as also various Experiments,  
Observations, and Reflections, in order to the set-  
ting forth the Natural History, and the Medicinal,  
Mechanical, and other Uses of them.

PART I.

Exhibiting the Fossils that are real, and natural, Earths,  
Stones, Marbles, Talcs, Coralloids, Spars, Crystals,  
Gems, Bitumens, Salts, Marcasites, Minerals, and  
Metals.





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 Appendix. Mineralia ferruginea, Magnes. Mantissa 1. Dendrita.  
 Mantissa 2. Fossilia incognita & incerta, p. 47.  
 Mantissa 3. Commentitia quaedam, seu Exempla quorundam Errorum apud Scriptores Fossilium. Mantissa 4. Fossilium quorundam Preparationes, p. 49.  
 Mantissa 5. Arma & Instrumenta lapidea, n. Spicula, Jacula, Cunei, Secures, veteris Ævi, p. 51.

*N.B.* There are some slight Irregularities, in the Order here observ'd, which may be easily corrected by comparing this Index with that of the native *English* Fossils, or with that of the additional native foreign Fossils, in the Catalogues of those Fossils.



## Terræ, &amp; Terris Affinia.

*Earths, and Earthy Substances.*

α. 1. **E**ARTH, of a light brown Colour, found about 6 Foot deep, at *Fort St. George*, and sent to me by Mr. *Edward Bulkley*, an inquisitive Surgeon in the *East-Indies*.

α. 2. A blackish Earth, looking as if burnt. From the Island of *Ascension*. Almost the whole Island consists of this sort of Earth. Mr. *Cunningham*, Surgeon.

α. 3. *Marga grysei coloris, in Saxo arenario, prope Lithopolin.* D. *Scheuchzer, M. D. Tigurinus*.

α. 4. Earth, with *Mica* in it. From *Connimere*, about 50 Miles from *Fort St. George*. 'Tis found at the Surface of the Ground; and used by Potters to make Gurgalets, or Water Vessels, to drink out of. Mr. *Bulkley*.

α. 5. Earth, found near the Surface; and used by the Goldsmiths for Cuppels. *Fort St. George*. Mr. *Bulkley*.

α. 6. The Earth of which the *China Ware* is made. Mr. *Cunningham*.

α. 7. *Medulla Saxi alba, Friberga in Saxonia.* Steinmark, *Stonemarrow*. This was sent me by Monsieur *de Schonberg, Berghauptman*, or Superintendant of all the Mines in *Saxony*, and free Baron of the Empire. [*Marga, Marrow, Medulla Saxi, Plinij.*]

α. 8. *Terra Lemnia*, native, and just as it was dug up in *Lemnos*, from whence it was brought by Mr. *Neighbour*.

α. 9. *Terra Lemnia*, dress'd and wash'd.

α. 10. *Terra Lemnia, rubicunda.*

α. 11. *Terra Oreana, Wormij Musæum*, p. 15. D. *Kisner*.

α. 12. *Terra sigillata Laubacensis*, D. *Scheuchzer*.

α. 13. *Terra flava Stregoniensis, ex Silesia*, D. *Kisner*.

α. 14. *Terra Goldbergensis*, D. *Kisner*.

α. 15. *Terra Labacensis alba*, D. *Kisner*.

α. 16. *Terra Silesiaca ex candido lutescens.* Vid. D. *Charleton de Fossilibus*, p. 6.

α. 18. *Terra Samia, candida.*

α. 19. *Bolus Armena*. This is the true Bole from *Armenia*; and in all respects like a Sample of it, that Dr. *Ball* procured from that Country.

α. 20. *Venetian Bole.*

a. 21. A native Earth, stiptick, and of the Bole-kind, extremely fine, of a Pink-Colour, with some small Variegations of Red and Yellow. From *Carolina*.

a. 22. Another Sample of the same, not different, only 'tis vein'd with white, and has small Spangles of a white silvery Talc in it.

a. 23. A sort of greyish Earth, seeming to be of the Fullers-kind. *Virginia*.

a. 24. Sent by the Name of Fullers-Earth, from *Fort St. George*. Mr. *Bulkley*.

a. 25. Umbre, native; from *Cyprus*, found in great Quantity.

a. 26. Umbre. *Scanderoon*, in *Turkey*.

a. 27. Earth, of a pale brown Colour, compos'd of several very thin Strata; sent by the Name of Umbre, found 15 Foot deep. *Fort St. George*. Mr. *Bulkley*.

a. 28. *Giallolina*, an Earth of the brightest Gold Colour of any we have. Indeed it surpasses Orpiment, and all the other Yellows, both for lasting, and the Beauty of the Colour. 'Tis native, and just as it was taken forth of the Earth, at ----- in the Kingdom of *Naples*. The whole, ground down upon the Stone with Oil, is ready for Use.

a. 29. *Ochra Romana*. This is wash'd, and freed by that means from the Sand that is found amongst it. It makes a deep or brown Yellow, carries a good Body, and mixes well with other Colours. It is got in great Quantity at ----- near *Rome*.

a. 30. *French Ochre*, yellow.

a. 31. Sent by the Name of Ochre. *Fort St. George*. Mr. *Bulkley*.

a. 32. *Terra Verde*, native, and in the very Condition wherein it is found in considerable Quantity, in the Mountain ----- in the Pope's Dominions, not far from *Rome*. It is somewhat unctuous, and adheres slightly to the Tongue. When scrap'd, and the finer Parts separated, and broken in a Mortar, 'tis ready to be made up with Oil for the Use of Painters, and makes the most true and lasting Green of any simple Body they use.

a. 33. Another Sample; from the same Place. This has a slight Cast of Blue in it. Mr. *Howard*.

a. 34. *Berg-Grün Germanis*, i. e. Mineral-Green. The Water that proceeds thorough the Drains forth of the Copper-Mines, near *Newfol*, in *Hungary*, abounds in Vitriol. This they frequently separate and crystallize, by putting Iron into the Water: and after the Vitriol is crystalliz'd, this *Berg-Grün* settles to the Bottom of the Vessels. Mr. *Weber*. This appears to be little different from the common *Terre Verte*.

a. 35. A reddish, brown, crusty Earth, used to colour the Walls of their Houses at *Fort St. George*. Mr. *Bulkley*.

a. 36. *East-Indian* red Earth, with *Mica* of white Talc in it for Painters.

a. 37. Red Earth, used by Painters. *East-Indies*. Mr. *Edward Tarry* informs me that this Earth is got, in great Quantities, in the Island of *Ormuz* in the *Persian Gulf*; and carry'd thence, in great Quan-

Quantities, to *Surat*, *Bengala*, and other Parts of *India*; where 'tis used in painting of Houses, Ships, &c. He observ'd frequently of this Earth adhering to the *Sal Gemma* brought from *Ormuz*: and therefore concludes they lay together in the Earth.

α. 38. Stone Colour: the finest red Earth from the *East Indies*.

α. 39. Red French Chalk, got at ----- in the *French-Flanders*.

α. 40. Another Sample more unctuous, and seeming to consist of Parts somewhat finer, from the same Place.

α. 41. White Tripely. *France*.

α. 42<sup>x</sup>. Tripely, white with a Blush of Red, from the *Streights*.

α. 42. Tripely, white; brought with the former.

α. 43. Tripely. *Virginia*.

α. 44. Tripely. *Venice*.

α. 45. A soft, friable, talky Mass, glossy, grey with a Cast of Green. Out of the Lead-Mine, near *Widstahta* in *Sweden*. Mr. *Lethalier*.

α. 46. French Chalk. *Morocthus Dioscoridis*. *Meroetes Plinij*. 'Tis Grey, with a Cast of Green.

α. 47. Another Sample, paler.

α. 48. Another with a Brown Cast.

α. 49. *Lac Luna*. *Hamburgh*.

#### A R E N Æ.

##### *Various Kinds of Sand: and other like Bodies*

† α. 1. Brown Sand from the Isle of *St. Thomas*, near *Guinea*.

† α. 2. A yellowish Sand from the Shores of the Sea. *Guinea*.

† α. 3. Sand of a dark red Colour, near black. From *Newfoundland*. Mr. *Newman*.

† α. 4. Sand of a pale brown Colour. *Maryland*, Mr. *Vernon*. There were found in the Stratum of this Sand, a great Variety of Sea-Shells, several whereof are exhibited in the other Part of this Catalogue, *vid. § 121*. and there are some small Fragments of Shells among this Sand.

† α. 5. Very small Pebles, Fragments of Coral, and of Shells, smooth'd and worn, by the Agitation of the Sea. Sent by Mr. *Cunningham*, under the Title of *Sand from the Isle of Ascension*.

† α. 6. A sandy Mass, found at the Surface of the Earth. *Fort St. George*. Mr. *Bulkley*.

#### S A X A.

##### *Stones found in large Masses.*

€ 1. A Mass of Stone very close, firm, and compact, sent by the Baron de *Schonberg*, with the Inscription, *Silex durissimus luteus, cornuus Lapis dictus. Fribergæ in Saxonia. Gelber Hornstein*, i. e. yellow Hornstone. [It lies in Strata, as I am inform'd by Mr. *Weber*, who is a Native of *Hungary*, and has been long conversant in the Mines there, as likewise in those of *Saxony*.]

€ 2. *Lapis Altenbergicus violas olens, in calore conspersus vino. Fielstein*. M. de *Scornberg*.



- C. 3. *Cryscolla lapidea, ex Suitensium Alpibus.* D. Scheuchzer.  
 C. 4. Oil-Stone, from *Luneburgh, Germany.*  
 C. 5. Polishing Stone. *Luneburgh.*  
 C. 6. Touch-stone.

## M A R M O R A.

*Various Kinds of Marble.*

γ. 1. *Marmor atro-Gryseum, rubenti, carneo, & albo pulcherrimè variegatum.*

γ. 2. *Marmor nitidissimum, atro, candido, & viridi intus collucido insigniter variegatum.*

γ. 3. Marble, very hard, variegated with black and white. *Fort St. George. Mr. Bulkley.*

γ. 4. Porphyry, found, by *Henry Worsley*, in *Arabia Petraea*, at about 2 Miles Distance from the Granite, γ 5. and 6. There were many vast Strata; and indeed whole Rocks intirely of this Porphyry.

γ. 5. Granite, the Ground white, with a Cast of Red, spotted with Black. Found in *Arabia Petraea*, about 50 Miles from Mount Sinai, by Mr. *Henry Worsley*. There were many vast Rocks of this and the following Granite. He observ'd Strata of it, about 2 Yards in Thickness, lying one upon another. This is the true oriental Granite; and the two Obelisks at *Alexandria*, and that near *Grand Cairo*, are all of this sort of Stone: as are also the Obelisks at *Rome*, and all the rest he ever saw. The Tomb, or sepulchral Chest (of which he has a Piece) in the great Pyramid in *Egypt*, is of the same. He was told there were Quarries of it in the Upper *Egypt*.

γ. 6. Granite, the Ground white, spotted with a bright shining Black. From *Arabia Petraea*. Mr. *Henry Worsley*.

## ALABASTRITES: &amp; LAPIS-GYPSEUS.

*Alabaster. All-Plaster.*

Δ. 1. *Alabastrites, ex Monte Legerio, Comitatus Badensis. Helveti pro Gypso utuntur.* D. Scheuchzer.

Δ. 2. *Lapis Gypseus, ex fodinis Osterodensibus, Ducatus Hannoveriensis.* Dr. Leopold of Lubeck.

## CALCULI: &amp; SILICES.

*Pebbles and Flints.*

ε. 1. Several Pebbles, black, white, grey, and brown, cemented together into the same Mass, by means of Sand that is interposed betwixt them. There is of like sort in several Parts of *England*. This was sent me by M. *Valkenier*, from *Switzerland*, where there are many very vast Mountains constituted intirely of the like: as there are also in this Island.

- ε. 2. A Pebble from the Shores of *Messina* in *Sicily*, grey, with small Holes in it, as if eroded by some Insect.
- ε. 3. A Pebble, White and Brick-Colour. *Newfoundland*.
- ε. 4. A Piece of a greyish white Pebble, sent by the Name of a *Firestone*, from *Fort St. George*. Mr. *Bulkley*.
- ε. 5. A white Pebble, *Guinea*.
- ε. 6. Another from the same Place in *Guinea*. 'Tis wont to be powder'd and us'd there instead of Emery.
- ε. 7. A small brown plated Pebble, brought from some Part of the *East Indies*.
- ε. 8. A brown Pebble, *Fort St. George*.
- ε. 9. Small white Pebbles, from the very Top of the Table-Mountain, at the Cape of *Good Hope*. Mr. *Cunningham*.
- ε. 10. A grey Pebble with sparry parallel Veins. *Newfoundland*. Mr. *Newman*. [This is no Pebble; it seems to have been worn and ground into this Form by the Motion of Water.]
- ε. 11. A semipellucid Pebble, found (with many more) near *Hecla, Islandia*. Sir *Thomas Brown*.
- † ε. 1. A Piece of a crystallin Flint. *Virginia*.
- † ε. 2. A blackish grey Flint, little different from the *English*, sent for petrified Wood, from *Virginia*. Mr. *Bird*.
- † ε. 3. A brown Flint sent by Dr. *Kisner*, with the Inscription, *Lignum petrefactum ex Sylva Budingensi*.

## TALCUM FIBROSUM.

## § 1. The fibrous talky Bodies.

ζ. 1. *Gypsum Striatum*. Mr. *Weber*, who is an *Hungarian* and has been long conversant in the Mines of that Country, and of *Saxony*, assures me, that this Kind is commonly found in the perpendicular Fissures of the Strata: and that it is the true white *Spaad* of the *Germans*. The same Sort is found in several Parts of *England*, and is used by our Silver-Smiths for casting. They likewise call it *Spaad*. This Specimen was sent by the Baron *de Schonberg*, with the Inscription, *Marmor metallicum album pellucidum. Mariebergæ in Saxonia. Weiser durchsichtiger Spaad, i. e. White transparent Spaad*.

ζ. 2. Another Sample, not differing from the former. Sent me from *Lubeck* by the very learned M. *a Mellen*, by the Name of *Spatum*.

ζ. 3. A fibrous talky Body sent by Dr. *Scheuchzer* of *Zurich*, with the Inscription, *Amianthus subviridis ex Rupibus Clavema*.

ζ. 4. *Alumen Plumosum*. *Hamburgh*.

ζ. 5. *Lapis Amianthus, seu Asbestos, una cum Lino Asbesti, ex Cypro Insula*. There are 3 Samples of the Stone, with the *Linum* in it; that were all brought from *Cyprus*, and presented me by three several Hands.

ζ. 6. *Amianthus Hungaricus. Stein Flacks, i. e. Stone Flax*. M. *de Schonberg*. [It lies in small Veins, generally in the Iron Mines. Mr. *Weber*].

## §. 2. The flakey or plated TALKY BODIES.

*Talcum squamosum, seu foliaceum.*

xz. 1. *Lapis specularis Plinii*. Ifinglaß, or *Muscovy Glas*; from *Russia*.

xz. 2. Another Specimen of the same Sort, from *Schneeberg*. Sent by the Baron *Schonberg*, with the Inscription, *Talcum Kalg*, i. e. *Kauk*.

xz. 3. Another of still the same Sort, from *East India*. Sent by Mr. *Bulkley*, with the following Account. *Tella Aburra-cum*. It is found by the Sea-Shore, and is a Sort of *Selenites*, and us'd commonly for such Purposes, as we do that.

xz. 4. *Lapis Specularis*. *Annaberga* in *Saxonia*. *Katzen Silber*, i. e. *Cat-Silver*. M. de *Schonberg*. [It is not quite so clean as the former.]

xz. 5. *Talc*, white with a Cast of Green, from *Carinthia*. Dr. *Edward Brown*.

xz. 6. *Talcum Venetum, foliatum, ex candido Viridescens*.

xz. 7. *Talcum album, foliaceum, in fluore siliceo candido à Gorinburga Suecia*.

xz. 8. *Talcum album foliaceum, in fluore candido*. *Virginia*. Mr. *Bird*. There adheres to it Fragments of the *Pyrites*.

xz. 9. *Talcum ejusdem omnino generis*. Hoc transmissit Dominus *Leopold*, sub nomine *Micæ Aschaffenburgicæ*, quinque Milliaribus *Francofurto* ad *Manum*. *Glimmer*, i. e. *Cat-Silver*.

xz. 10. *Talc*, grey. Sent by the Name of petrified *Wallnut-Tree* from *Virginia*.

xz. 11. *Talky*, grey; found in *Mount St. Thomas*, *Fort St. George*, and call'd there *Collinara*.

xz. 12. *Lapis Talciformis, cinerej coloris propè Tigurim*. D. *Scheuchzer*.

xz. 13. *Talc*, sparkling; of a grey Complexion, in a reddish Stone. There is a Vein of a white striated, or fibrous talky Spar in it. From the *Rechen Mountain*, near *Franzendorf*, in *Bohemia*.

xz. 14. A brown Stone, thick set with small Spangles of silvery *Talc*. This is *Emery*, of the softer kind, us'd chiefly in grinding the Looking-Glass Plates: as likewise by *Lapidaries*, for setting and cutting *Cryстал*, and the softer Stones.

xz. 15. A *Talky Stone*, flakey: and of a grey, glossy, Complexion. This is the *Emery* of the harder kind; us'd for polishing of *Iron*.

xz. 16. *Emery*, from *Smyrna*.

xz. 17. *Nella Corivindum* is found in Fields where the *Rice* grows. It is commonly thrown up by *Field Rats*, and us'd as we do *Emery*, to polish *Iron*.

xz. 18. *Lapis odore Violarum*. Vom. *Reisengeburge Viol-Stein*, i. e. *Violet Stone*, of the *Giant Mountains*. M. de *Schonberg*.

x 7. 19. A black foliaceous Talc, found at the Bottoms of Rivers. *Fort St. George.* Call'd there, *Abbara Com.* Mr. Bulkley.

x 7. 20. A foliaceous Talc, very black. The *Gentoo's* call it *Kistana Aburracum.* *Fort St. George.* Mr. Bulkley.

x 7. 21. A black, shining, stringy Talc; with one large Vein, and several lesser, of white Spar in it. *Maryland.* Mr. *Vernon.*

x 7. 22. *Mica Nigra*, found in a River near *Fort St. George.* Mr. Bulkley.

x 7. 23. *Mica nigra.* Found in *Arabia Deserta.* Mr. *Worsely.* Indeed the Granite found in this Country is a *Mica*, *vid. γ. 5.* and 6. *supra.*

x 7. 24. A brown sparry Body, thick set with Flakes of black Talc. From ----- in *France.* 'Tis used for the casting the Brass Plates of which the Wire is made: and abides the Fire better than any other Stone yet applied to that Purpose. 'Tis Part of a *S.ratum*: and much resembles the Granite Marble.

x 7. 25. *Hema Aburracum.* 'Tis a Copper-Colour'd shivery Talc. It is variously prepar'd and us'd in *Vertigos* and *Arthritick Pains.* They dig 15 or 16 Foot deep for it. Mr. Bulkley. *Fort. St. George.*

x 7. 26. A yellow flakey Talc. *Norway.*

x 7. 27. Another like Sort, from a Hill above the Freshes of *St. James's River* in *Virginia.* 'Tis found in vast Quantity underneath a Bed of white Clay. Mr. *Wafer.*

x 7. 28. Another harder. Dr. *Leopold.* *Lapis Mica non multum dissimilis, Grunstein incolis dictus, non procul ab officinis ferrarijs Hasebyensibus in silva effoditur, & ad depurandam Venam Martis pisiformem incolis inseruit.* *Glimmer.*

x 7. 29. A pale yellow Talc. *Virginia.* Mr. *Bird.*

x 7. 30. Grey Talc, with a Cast of yellow. From the Shores of *Messina, Sicily.*

x 7. 31. *Mica in Silice arenario, ex Sila Fluvi o.* Dr. *Scheuchzer.*

x 7. 32. A shining foliaceous yellow Talc. *Virginia.*

x 7. 33. A yellow massy Talc, very ponderous. *Fort St. George.* Mr. Bulkley.

#### APPENDIX.

##### *Selenites, & Affinia.*

Talky plated Bodies, somewhat approaching the Constitution of the *Lapis Specularis*

+ 7. 1. *Lapis Specularis Luneburgicus.* Dr. *Kisner.*

+ 7. 2. Another like Body. Out of the *Grisons* Country. M. *Valkenier.*

+ 7. 3. *Ex crescentia Friberga in Saxonia.* M. de *Schonberg.* [Mr. *Weber* assures me, this is one sort of that Body that the Germans call *Spaat* or *Spaad.*]

#### §. 3. *The Rhomboid Selenites.*

+ 7. 1. A Mass compos'd of transparent parallel Plates, exactly of the Constitution of the *Selenites*: and breaking into Rhom-

boid Plates. Found in Clay near the Surface of the Earth. *Fort St. George*. Mr. *Bulkley*; and call'd there *Corpore Salustu*.

†. 2. A *Rhomboid-Selenites*. Newfoundland. Mr. *Newman*.

## LUDUS HELMONTII.

### *The Waxen-Vein.*

n. 1. A piece of the true *Ludus Helmontij*, found in the Place mention'd by that Author \*, near *Antwerp*: and brought thence by his Son, *Fr. Merc. Van Helmont*, into *England*. He gave it to - - - and he to Mr. *Kemp*: of whom I had this Piece. 'Tis of the Colour mention'd by *Wormius* †; viz. a dusky brown. The Colour of it is somewhat darker than that of those found in *England* ordinarily is; otherwise the Stone is exactly of the same Constitution: and parted into *Tali*, by means of *Septa*, as ours are. Those *Septa* also consist of a talky Spar: and are compos'd of Plates striated across, like those of *England*. See the *Catalogue of the English Fossils*, Vol. I. Class IV. Part III.

n. 2. Another Piece, not different from the former; only the *Tali* are of a grey Colour: and the *Septa* of a paler talky Spar; so that this is in all respects exactly like those we commonly find in *England*. 'Twas found at - - - in *Germany*: brought over by *Fr. M. Van Helmont*: and given as his Father's *Ludus*, to Mr. *Foxcroft*, Fellow of King's-College in *Cambridge*. The latter gave it to Sir *Isaac Newton*, and he to me.

## BELEMNITES.

### *The Thunder-Stone.*

0. 1. *Belemnites ex Agro propè pagum Bleistorp in Districtu Neostadiensis*. Dr. *Leopold* of *Lubeck*.

0. 2. Fragments of the jointed Cones forth of the Conic Cavities of two *Belemnites*, sent by Dr. *Scheuchzer*, with the Inscription *Alveoli ex Comitatu Neocastrensis*. Confer. *Lithographiam Helveticam*. L. 7. p. 10. 8°.

0. 3. *Belemnites in Hammita ferrca, ex Raurica Valle*. Dr. *Scheuchzer*. Vide *Specimen Lithographia Helvetica*, p. 42.

0. 4. Two conic *Belemnites*, with *Stria* tending from the Surface to the Axis of the Body, of the same Constitution, and in all other respects like those of *England*. See the 1st Vol. of the *Catalogue of the English Fossils*, p. --- & seqq.

0. 5. Three medullar, jointed Cones of *Belemnites*, exactly like those of *England*. See the *Catalogue of English Fossils*, Vol. I. p. \* 25. & seqq.

## LAPIDES CRUSTATI.

### *The various Kinds of coated Stones.*

1. 1. *Ætites Ochreo-ferreus*. 'Tis of a pale brown Colour. From *Basil*, Switzerland. M. *Valkenier*.

\* *De Lithiast*, C. 3. Sect. 28. p. 700.

† *Colore fuligineo, ad flavum vergente*. *Museum*, p. 39.



1. 2. *Ætites Ochreo-ferreus*. 'Tis of a dusky brown Colour, near black. From - - - in France.

1. 3. Geodes, found near *Ferrara*, in Italy. *Agostino Scilla* sent it me.

1. 4. Geodes. From - - - in Germany.

1. 5. This is of the very same Kind and Constitution with that commonly found about London, lodged in the Clay us'd for making of Bricks. The Workmen call it *Race* or *Rance*. See the 1st Vol. of the Catalogue of the English Fossils, p. 18. 'Twas sent by Dr. *Kisner* with the Inscription, *Osteocolla, ex Agro Hambergensi, duobus circiter milliaribus à Francofurto*. Germanicè *Erdmannngen*, i.e. *Terra homunculus*.

1. 6. Geodes found in Clay, by *Sellbold*, a Town near *Hanover*. It differs not from the *Rance* found in the Brick-Clay-Pits about London: only 'tis somewhat more white, and of a finer Constitution. Dr. *Kisner*.

1. 7. A Cylindrick Body, externally of a pale brown Colour, compos'd of numerous very thin Crufts, alternately of a paler and deeper Brown. In the middle is a Cylinder of a coarse cretaceous Matter, white, with a blush of red. This is the *Phallus* or *Priapus Lapidus* of the Germans. Mr. *Doody*.

#### CORALLOIDEA.

##### Fossil Coralloid-Bodies.

x. 1. Several Joints of a Coralloid-Body, having its Surface thick set with *Stria* running all parallel and longways. Sent by *Agostino Scilla* from Sicily, with this Inscription, *Corallo articulo, copiosissimo, per tutte le Rocche e Colline di Messina*. He has publish'd an Icon of it in his *Lettera circa i Corpi marini petrificati*, 4<sup>o</sup>. Tab. 21. Fig. 1. 'Tis the same with that delineated by *S. Ferrante Imperato*. *Histor. Natural.* pag. 628. under the Title of *Corallo articulo*; which he procur'd from the Island *Majorca*.

x. 2. A large Piece of the same sort, appearing like the Base or Root of a Coral. *Agostino Scilla*, Tab. 21. Fig. 2.

x. 3. *Corallo fistoloso, che in Abondanza si vede nella Colline di Messina*. *Agostino Scilla*, Tab. 20. Fig. 2. 'Tis a Coral of the *Porus* kind: and seems to be describ'd by *J. Bauhin* under the Name of *Corallium geniculatum album*, L. 39. l. 24. Vide *S. Ferrante Imperato*, p. 628.

x. 4. *Porus coralloides Fossilis*. From Maryland.

x. 5. *Porus coralloides Fossilis*, somewhat different. From Maryland

x. 6. *Porus coralloides Fossilis*. Another Species having the starr'd Pori larger, more cavernous, and standing closer together. Maryland.

x. 7. Sent by *Agostino Scilla*, with the Inscription, *Milleporus petrificati delle quale si fa Pietre Stellarie*. 'Tis not describ'd in his Book, he having not found this Body, till after that was printed.

κ. 8. The Honey-Comb-Stone. Dug up in the Island of *Barbadoes*, and given me by *Benjamin Middleton*.

κ. 9. *Milleporo*, trovati con infiniti altri corpi di Mare fra Terra nel Capo della Città di *Millazzo*. *Agostino Scilla*, Tab. 17. β.

κ. 10. This beautiful *Corallin Astroites* was sent me by *Agostino Scilla*, with the Inscription, *Milleporo trovato nella Colline di Messina*. This was found since he wrote his Book: and is not described there.

κ. 11. Pieces of a sort of *Coralloid Porus* in a soft Stone. Found in the Rocks near *Messina*, *Sicily*. By - - - Surgeon.

κ. 12. Another, from the same Rocks. By - - - Surgeon.

κ. 13. Sent by *Dr. Scheuchzer*, with the Inscription, *Rhizoides, seu Radicem referens Lapis nondum descriptus ex Comitatu Neocestrensi*.

κ. 14. A *Mycitites*, round, flat, near three Inches in Diameter; with a sharp Peduncle arising out of the middle of it. Found near *Schaffhuse*, *Switzerland*. *M. Valkenier*.

κ. 15. *Branchiali congener Columellus striatus: sive Bryonia lapidea Plotij*. *Dr. Scheuchzer*. Vide *Lithologia Helvetica Specimen*. p. 43. f. 58. ex *Birsa flumine*.

κ. 16. *Alcyonium Fossile ex Monte Randio Scaphusianorum*. *Dr. Scheuchzer*.

κ. 17. *Alcyonium Stupposum Imperati*. *Dr. Scheuchzer*. *Lithographiæ*, p. 15. f. 19.

κ. 18. *Corallij Fossilis cortex reticulatus, ex Monte Legerio*. *Dr. Scheuchzer*, *Lithographiæ*, p. 14. f. 17.

κ. 19. *Mycitites*. Sent me by *Agostino Scilla*, it is not describ'd in his Book.

κ. 20. *Mycitites ex Agro Mantuano Italia*.

κ. 21. *Mycitites ex Agro Bononiensi*. 'Tis the *Fungites* of *Dr. Plot*, in his *Natural History of Staffordshire*. Tab. 12. f. 4.

κ. 22. This curious mineral *Mycitites* was sent me by *Agostino Scilla*. It seems to be his 2d *Poro*. Tab. 14.

#### CRYSTALLI & FLUORES.

##### *Incrustations, Stalactites, Stalagmites, Crystals, and Spars.*

λ. 1. A sparry Incrustation made by the Water of the Baths of *Eisenback*, near *Schemnitz*, in *Hungary*, upon the wooden Planks on the Sides of the Baths. It grows so fast, that they are constrain'd to change and renew the Planks yearly.

λ. 2. A sparry Incrustation, somewhat coarser than the former; ex *Thermis Badensibus*. *Dr. Kiser*.

λ. 3. An Incrustation, out of the Pipes that convey the Water into the Baths of *Buda*, brought thence by *Dr. E. Brown*.

λ. 4. White Spar, from the Sweating-Bath at *Glassiten*, in *Hungary*. *Dr. Brown*.

λ. 5. *Fluores Selenitici, octaedri, & hendecaedri, lentibus ferè similes, quorum hedra tres in Pyramides oppositas coeunt, reliqua latera claudunt. In marmore nigro ad Thermas Fabarias, Dr. Scheuchzer.*

λ. 6. *In Marmore nigro Fabariano, Frumentalis Lapidis, Imperatæ Vestigia. Dr. Scheuchzer.*

λ. 7. *Silex rutilus in vena cinerea, Fribergæ in Saxonia. Rothur Hornstein, i.e. Red Hornstone. M. de Schonberg.*

λ. 8. A white Spar, like that of the Lead-Mines near *Worksworth*, in the *Peak*. See the *Catalogue of English Fossils, f. N°* ----- It breaking into Rhomboid Figures. From the *Grisons Country. M. Valkenier.*

λ. 9. A Spar sent by Dr. *Scheuchzer*, with the Inscription *Selenites Rhomboidalis cujus fundo ascendit nebula, Lithographiæ Helveticæ, p. 49, 53. Fig. 73. Ex Crypta Montis Gamor.* This, and the following, are of the same sort of Spar; and 'tis common also in the *Peak*, and in the *Yorkshire Lead-Mines*. They call it *Spiegel Spaht*.

λ. 10. *Selenites Rhomboidalis venis nigricantibus. Dr. Scheuchzer, Lithographiæ Helveticæ, p. 49. f. 71, 72.*

λ. 11. *Selenites Rhomboidalis, in Lapide calcario juxta Moguntium reperiundus. Dr. Kiser.*

λ. 12. A Spar, in some parts flakey, in others stringy; white, with a Cast of yellow. From a Mountain in the Territory of *Zurich. M. Valkenier.*

λ. 13. *Tella Convindum. Fort St. George. Mr. Bulkley.* 'Tis a talky Spar, grey, with a Cast of green. It is used to polish Rubies and Diamonds.

λ. 14. *Lapis Bononiensis Phosphorus.* It seems to be a grey talky Spar. Being broke lengthways, it is fibrous; but, when broke across, the Fibres smooth and plain. From the Place where this Body is commonly found, viz. in a River, at the Foot of the *Appennine Mountains*, about 3 Miles from *Bononia* towards *Firenza*. *Lap. Bonon. ejusq; Vires lucida, primo detectæ à Vinc. Casciorolo Chymico, in Monte Palermo, circa Bononiam post Pluvias ingentes, reperitur. Chr. Menkelij Lap. Bonon. 12°. p. 31. De Fig. Magnit. & Constitutione Lap. Bon. ib. 49. De Preparandi modo, p. 59. Conf. Chymie de M. Lemery ----- & Epist. Marsiglij, Act. Erud. An. 97. p. 404.*

λ. 14\*. Part of another *Bononian-Stone*, that was round, and composed of Fibres passing from the Surface to the Center, much like some of the vitriolick *Pyritæ*. From the same River.

λ. 14†. Another, glossy and shining, as the two former are, but not seeming to be so fibrous. Out of the same River, and indeed it seems to have been worn by the Agitation of the Water.

λ. 15. *Coppoora Sillagitto*, is good against the Stone, Gravel, and stoppage of Urine; but it must first pass a difficult and tedious Preparation. Mr. *Bulkley.* 'Tis only a white talky Spar.

λ. 16. *Stalactites ex albo rubens, è Metallis fœdibus Rhetia, Sinter Fossilibus Germanis vocatur. Dr. Scheuchzer.*

λ. 17. A white sparry Stalactites, compos'd of Crusts one upon another; *ex agro Tigurino*. *M. Valkenier*. 'Tis in Constitution, and all other respects, exactly like ours in England. See the *Catalogue of English Fossils*, f. N° -- *Dropslein*.

λ. 18. Stalactites. 'Tis of the Colour and Constitution of the Pumices, as they are call'd, that are very common all over the Island of *Tenariffe*, where this was found hanging down from the Vault of a Grotto.

λ. 19. *Un Sasso, che un tempo fu stanza di Vermine marine di Calabria*, *Agostino Scilla*, Tab. 15. This Gentleman was very fond of having almost all the figured Fossils he met with of Marine Origin. This he thinks a Cluster of marine *Vermiculi*. 'Tis certain it is not such; nor are there any *Vermiculi* that resemble these. Indeed 'tis apparently no testaceous, but a stoney or coarse sparry Substance, not unlike the former; and seems to have hung or grown sideways to a Rock, like the Stalactitæ, and other analogous Bodies.

λ. 20. A Stalactites, consisting of several Incrustations of a coarse white Spar. Found, with many more, hanging down from an Arch of a Cloyster lately built in *Lisbon*. *Mr. Francis Taylour*. There are frequently found like Bodies hanging down from Arches of Stone-Bridges all over *England*.

λ. 21. A sparry Incrustation upon some vegetable Stems, sent by *Dr. Leopold*, with the Inscription, *Osteocolla Hassiaca, prope Giessam, Academiam celebrem, reperitur*.

λ. 22. A florid, sparry Incrustation upon some vegetable Bodies. Sent by *Dr. Leopold*, with the Inscription, *Stalactites ex specu Baumanniana in Ducatu Lunenburgensi*.

λ. 23. A white sparry Incrustation upon Moss, with Stalactitæ, very fine, hanging down from it. *Ex agro Tigurino*. *Mr. Valkenier*.

λ. 24. *Muscus petrifactus prope Braubacum reperiundus, non procul à Thermis Emesensibus*. *Dr. Kistner*.

λ. 25. A sparry Incrustation upon Moss, very much like that found in the Dropping-Well at *Knaresborough* in *Yorkshire*, in the Springs in some Parts of *Oxfordshire*, *Northamptonshire*, &c. Sent by *Dr. Leopold*, with the Inscription, *Muscus Lapidens prope Jenam repertus in Rivulo qui ex fonte Principis vulgo dicto derivatur, Germanicè der Furstenbrunnen*.

λ. 26. A sparry Incrustation upon Leaves, sent by *Dr. Scheuchzer*, with the Inscription, *Tofus cui folia Quercus, Fagi, Alni, &c. sunt impressa, à Pago Stallicon, Ditionis Tigurinae. Vide Miscellanea curiosa, An. 1697. Append. p. 66*.

λ. 27. Another like Incrustation. From the same Place. *M. Valkenier*.

λ. 28. *Osteocolla Officinarum*. From *Hamburgh*. All the *Osteocolla* of the Shops is fistulous, and a mere marley Incrustation.

λ. 29. Sent by *Agostino Scilla*, with the Inscription, *Animale marino curiosissime petrificato. Messina*. It is not described in his Book.



λ. 30. Sent by *Agostino Scilla*. 'Tis an Incrustation upon a turbinated Shell; the like frequently happens upon Shells, Sticks, &c. in petrifying Springs, Rivulets, &c. *Vide The Natural History of the Earth*, p. ---

λ. 31. *Stalagmitæ*. From a Spring in ----- one of the *Canary Islands*.

λ. 32. *Confetti di Tivoli*.

λ. 33. *Argentum nigrum in Silice candido*. *Fribergæ in Saxonia*. *Schwartz*. *Silber Ertz in weissen Quartz*; i.e. Black Silver-Ore in white Quartz. *M. de Schonberg*.

λ. 34. *Fluor Crystallinus trigonus*. *Vid. Specimen Lithographia Helvetica*, p. 29. *Saccharum candidum referens*. *Ex Lapidina Oeningensi*. *Dr. Scheuchzer*.

λ. 35. *Fluor Crystallinus trigonus*. *Ex eadem Lapidina*. *Dr. Scheuchzer*.

λ. 36. Sent by *Dr. Scheuchzer*, with the Inscription, *Fluor crystallinus trigonus, striis lateribus pyramidis cujusq; parallelis pulchre notatus. Repertus prope Lithopolim*. *Vid. Specimen Lithographia Helvetica*, p. 29. f. 41.

λ. 37. *Excrecentia*, *Fribergæ in Saxonia*. *M. de Schonberg*.

λ. 38. Crystals, small, growing in the Inside of a concave flinty Nodule, sent by *Agostino Scilla*, with the Inscription, *Ingemma-mento in un Diaspro cavato nelle Miniere di Trapani in Sicilia*.

λ. 39. *Excrecentia*. *Fribergæ in Saxonia*. *M. de Schonberg*.

λ. 40. *Excrecentia multangularis*, *Ehrenfreidersdorff in Saxonia*. *M. de Schonberg*. *Vieleckigtes Quartz gewachse*, i.e. Multangular Quartz-Excrecence.

λ. 41. A white crystalliz'd Spar. *Virginia*. *Mr. Bird*.

λ. 42. *Crystallus, ex Alpibus Tigurinis*, Sprig-Crystal. *Dr. Scheuchzer*.

λ. 43. *Crystalli candidi*, *Eibenstock in Saxonia*. *Durchsichtige Weise Quartz Strahlen*; i.e. transparent, white, radiated Quartz. *M. de Schonberg*.

λ. 44. *Crystallus marmore Metallico albo circumdata*. *Ehrenfreidersdorff, in Saxonia*. *Strahlichter Quartz Crystall mit umbwachsenen weissen Spad*; i.e. radiated Quartz-Crystal, environ'd with white Spad. *M. de Schonberg*.

λ. 45. Crystals in a Cluster, as arising from the Stone of a Fish, in which they grew. One of the Shoots has a mossy Appearance in it. *Newfoundland*. *Mr. Newman*.

λ. 46. Crystals in a Cluster, but less. *New-England*. *Mr. Bridger*.

λ. 47. *Adamantes Prilornenses Silestæ*. *Reperiuntur in loco arenoso*. *Dr. Kifner*.

λ. 48. Two small transparent Crystal Shoots. One of them has a slight Cast of green. From *Newfoundland*. *Mr. Newman*.

λ. 49. Four small Crystal Sprigs. *New-England*. *Mr. Noyes*.

λ. 50. An hexangular Column of Crystal, 3 Inches in Length, and  $\frac{4}{10}$  of an Inch in Diameter; terminating at each end in an hexangular Pyramid. Dug up near *Turin*. *Mr. Jackson*.



λ. 51. *Pseudadamantes Alpini*, διαφάνεις, *hedris lateralibus & pyramidalibus præditi*. Ex Monte *Aubrig Suitsensium*. Dr. *Scheuchzer*.

λ. 52. *CrySTALLI exiguae, ex Alpibus Tiguriis*. These were sent me by the learned and ingenious *J. H. Hottinger*, M.D. of *Zurich*, Author of the *Dissertatio de CrySTALLIS*, 4<sup>o</sup>. *Tiguri* 1698, which he presented me along with these.

λ. 53. *Pseudadamantes Alpini hedris lateralibus carentes, vel paucis & angustis, præditi*. Ex Monte *Aubrig Suitsensium*. Dr. *Scheuchzer*.

λ. 54. *CrySTALLI, αμφάνεις puriores; sive Pseudadamantes, ex Albrig Monte excelso*. Dr. *Scheuchzer*.

λ. 55. Four Pieces of *Peble-Crystal*, with mossy Appearances in them.

λ. 56. *Adamus Bohemicus, ex ipso fonte Albis*. Dr. *Kisner*.

#### APPENDIX I.

*CrySTals and Spars tinged with various Colours, by means of metallick and mineral Matter that is incorporated with them.*

##### *CrySTALLI & Fluores Coloribus tincti.*

† λ. 1. *Marmor Metallicum rubicundum pellucidum*. *Mariebergæ in Saxonia*. *Rother durchsichtiger Spaad*. M. de *Schonberg*; i.e. red transparent *Spaad*. [They use both this, and the white *Spaad*, or common *Lime*, where *Spaad* is not to be got, as an Absorbent of Sulphurs, in running the Silver and Copper-Ores, all over Germany and Hungary, at the great Smelting-Works. It grows in Veins. This is the true red *Spaad*. Mr. *Weber*.

† λ. 2. *Lapis calcarinus Luneburgicus ex albo & rubro ingemmatum*. Dr. *Kisner*. 'Tis a pale red Spar.

† λ. 3. *Fluor purpureus. Annabergæ in Saxonia*. *Brauner-Fluss*, i.e. Brown Spar. M. de *Schonberg*.

† λ. 4. *Fluor purpurascens. Schwarztzburg, in Saxonia*. *Bleauw Greussen*; i.e. Blue Greussen. M. de *Schonberg*.

† λ. 5. *CrySTALLUS hexagona Mica Viridi adspersa. Ex Alpibus Uriis*. Dr. *Scheuchzer*.

† λ. 6. *Excrescentia. Fribergæ in Saxonia*. M. de *Schonberg*.

#### APPENDIX II.

*CrySTals and Spars, having various metallick and mineral Efflorescencies concreted together with them.*

##### *Metalla & Mineralia Fluoribus & CrySTALLIS adnata.*

\* λ. 1. A Spar, white, compos'd of trigonal Shoots, striated as it compos'd of other less subordinate Shoots, very glossy, arising out of a yellow brassy *Marcasite*, which is affix'd upon a Plate of grey Spar, that appears to be parted from the Stone of a Fissure of a Stratum. 'Tis a very wonderful beautiful Body. From *Hannover*. M. *Valkenier*.

\* λ. 2.

\* λ. 2. A white Spar, compos'd of parallel Plates, bright, shining and glossy, with Efflorescencies of yellow shining Marcasites upon it. 'Tis a Body extremely beautiful and fine. From *Hannover*. *M. Valkenier*.

\* λ. 3. Another like Body, sent by Dr. *Kisner*, with the Title of *Flores Cupri aspersi* [*Germanis Angeflogen*] *ad Spadum ex albo rubescentem*.

\* λ. 4. A white crystalliz'd Spar, with Efflorescencies of a bright, shining, brown Spar, Lead-Ore, and of Marcasite. The whole very fine. From *Hannover*. *M. Valkenier*.

\* λ. 5. *Excrescentia Crystallorum parvarum rubri Coloris, cum particulis Pyritis. Fribergæ in Saxonia. Rothe Quartz-strahlen mit Kies*; i.e. red radiated Quartz, with Marcasite. *M. de Schonberg*.

\* λ. 6. *Excrescentia. Fribergæ in Saxonia. M. de Schonberg*.

\* λ. 7. *Excrescentia Silicum, cum particulis Lapidis sulphureosi. Fribergæ in Saxonia. Quartzgewachse mit unterwachsenen gelben Kies*; i.e. Quartz-Excrescence, with yellow Marcasite grown under it. *M. de Schonberg*.

\* λ. 8. White Spar, with Efflorescencies of a yellow shining Marcasite upon it. *Trouvé proche de la source du Rhin, dans le Rhinwalde, qu'on appelle Rhenus posterior. M. Valkenier*.

\* λ. 9. *Excrescentia Quartz. Fribergæ in Saxonia. M. de Schonberg*.

\* λ. 10. *Excrescentia Silicum cum Minera Arsenici, argentei Coloris. Quartzstrahlen mit eingewachsenen Arsenicalischen Kies*: i.e. radiated Quartz, with Arsenical Marcasite grown in it. *M. de Schonberg*.

\* λ. 11. Spar, pretty transparent, and crystalliz'd, with some Fragments of Lead-Ore adhering to it; found in a perpendicular Fissure, about 300 Foot deep, in the Lead-Mine at *Clausihall, Hannover*. *Mr. Belchior*.

#### G E M M Æ.

*Gems, and other Stones commonly ranked along with them.*

μ. 1. *Lapis Lazuli. From Gomroon, in Persia. The Ground a white Spar, with Veins and Spots of a fine high ultra-marine Blue. There are in it also very numerous Micæ, of white silvery Talc: others of a yellow brassy Hue, and others of a reddish or copper Colour: these last being either a sort of golden Talc, or else a Marcasite. This was cut off of a larger Mass; the whole weigh'd near two Pounds. 'Twas of a roundish Shape, somewhat flattened: and not invest'd with any Crust. It had been rubb'd and smooth'd externally; the Surface, as this Sample shews, exactly resembling that of those Fragments of Marble, and other like Bodies, that have been worn round, and smooth'd, by the Agitation of the Sea and Rivers.*

μ. 2. *Lapis Lazuli. 'Tis very hard and compact, having in it, besides the Blue, Veins and Spots of Green. This was brought from Ispahan in Persia, but suppos'd to be got in Tartary.*

μ. 3. *Lapis Lazuli*. The Ground Spar, of a pale brown Colour, near white, spotted with a bright ultramarine Blue; and having in it several Grains of Marcasite, of a reddish or copper Colour.

μ. 4. *Lapis Nephriticus ex septimo Monte Rhetia*. Dr. Scheuchzer.

μ. 5. *Heliotropium*. The Blood-Stone.

μ. 6. An Agat, cut so as to shew the interior Parts, where the Ground appears to be of a fine, transparent, corneous Grey, having various white Crusts, one within another: 'Tis cover'd outwardly with a Cortex of a red Colour; the exterior Surface of which is scabrous and rough, exactly like the Surface of the Flint: of which kind this Body is. From ----- in the *East-Indies*.

μ. 7. A Plate of an Agate, large, and finely variegated.

μ. 8. A *Mochoa-Stone*, with Delineations of Shrubs.

μ. 9. *Achata diverforum Colorum*. Coblentz. M. de Schonberg.

μ. 10. *Chelidonium mineralis, ex Monte Doronaz, Ditionis Bernensis*. Dr. Scheuchzer.

μ. 11. *Chalcedonium Zwickaviensis*. *Chalcedon*. M. de Schonberg.

μ. 12. *Aqua Marina Eubenstockensis*. *Aqua Marin*. M. Baron de Schonberg.

μ. 13. *Molochites purpurea cum Crystallis albis*. *Ehrenfreidersdorff in Saxonia*. *Brauner Molochit mit durchwachsenen weissen Quarzstrahlen*; i. e. brown Molochite, with thorough-grown white radiated Quartz. M. de Schonberg. This, in some parts, has a Cast of Green; in others, of Purple.

μ. 14. *Excrementia Silicum cum purpurea Molochite*. *Ehrenfreidersdorff in Saxonia*. *Durchsichtige Quarzstrahlen mit braunen Molochiten*; i. e. Transparent radiated Quartz, with brown Molochite. M. de Schonberg.

μ. 15. *Molochites lutea, cum Crystallis minutis obducta*. *Ehrenfreidersdorff in Saxonia*. *Gelber Molochit mit durwachsenen weissen Quarz-strahlen*: i. e. yellow Molochite, with thorough-grown, white, radiated Quartz. M. de Schonberg. This has, on one side, a slight Cast of Green; but the greater part is Yellow.

μ. 16. *Molochites carulea*. *Ehrenfreidersdorff*. *Blauer Molochit*: i. e. blue Molochite. M. de Schonberg. This is chiefly of a Purple-Colour; but, in some parts, has a faint Cast of Green.

μ. 17. *Molochites viridis*. *Mariaberga in Saxonia*. *Gruener Molochit*: i. e. Green Molochite. M. de Schonberg.

μ. 18. *Malachita Tyrolensis*. Dr. Scheuchzer.

μ. 19. *Topasius Altenburgicus*. *Topas*. M. de Schonberg.

μ. 20. *Topasius Eibenstockensis*. M. de Schonberg.

μ. 21. *Pramnion super Lapidem luteum*. *Eibenstock in Saxonia*. *Schwarze Crystallen über gelb gestein*: i. e. Black Crystal, upon yellow Stone. M. de Schonberg.

μ. 22. An Emerald and Amethyst, in one Stone.

μ. 23. *Amerhythus Walkensteinensis in Saxonia*. M. de Schonberg.

μ. 24. Oriental Amethysts, native, only drill'd.

μ. 25. Oriental Granates, native, only drill'd.

μ. 26. Granates. Mr. Colchester.

μ. 27. A Granate, large, but foul, the Figure extraordinary. New-England. Mr. Bridger.

μ. 28. *Lapis Granatus*, è Bohemia. *Granaten erdte*: i. e. native Granate. M. de Schonberg.

*Lapides Venarum; seu materia lapidea varia in Venis Metallicis alijsque stratorum Saxorum Fissuris, reperta.*

VEIN-STONES.

Sales, Salts.

v. 1. *Sal Ammoniacum nativum ex Solfaterra Regni Neapolitani*. D. Scheuchzer. *Ejicitur etiam ex Montibus Vesuvio & Ætna. Convenit hoc Descriptioni D. Boccone Recherches Naturelles p. 47. quod coloris sit Crocei. Reperitur etiam citrini, & nonnunquam albi coloris. Hoc, cum sit volatile, nares halitu spirituofo ferit.*

v. 2. *Tincal Persarum, ex quo Borax conficitur.*

v. 2<sup>x</sup>. *Tincal native, as digg'd up, in the Island of Borneo. The Indians of Bengal call the Mineral, out of which Tincal is refin'd, Swagar. There are great Quantities brought down the Ganges; but from what Country I cannot learn.*

v. 3. *Rock-Salt of a dusky grey Colour, dug up not far from the Euxine Sea: and brought thence by Mr. Clarke a Surgeon.*

v. 4. *A brown Earth, out of which Nitre is extracted by the Natives. It lies at the Surface. Fort St. George. Mr. Bulkley.*

v. 5. *Flos Ferri nativi*, out of an Iron Mine in *Carinthia*. Dr. Edward Brown. 'Tis a Salt, very fine and white: Part of it of a flakey, and Part of a fibrous Constitution. Applied to the Tongue, it chills it like *Sal Prunella*, and has a Smatch of bitter; so that there seems to be Nitre in it.

v. 6. *Lapis fissilis ex quo Alumen, Sulphur, & Vitriolum excoquitur à Reichenbach in Saxonia. Scieter, so Alaunc, Schwefel und Vitriol gibt, i. e. Shiver that yields Alum, Sulphur and Vitriol.* M. de Schonberg.

v. 7. *Lapis fissilis nigricans, Alumine pregnans. Invenitur in Scania propè Eliarid, duo milliaria cum dimidio Ystadio distantem pagum. Rupicide illud non ex concameratis cuniculis, ut in Metallii fodinis fieri solet, sed ipsius montis lateribus, apertò undique cœlò, mucronatis ligonibus, vel alijs instrumentis, excindunt. Hî Lapides ita excisi, ac in conicos acervos super ligna congesti valida aluminis vi subiguntur, usque dum magis friabiles reddantur. Postquam verò refrixerunt, in amplissima vasa lignea quadrata feruntur, ubi aqua frigida affusione debita eoque macerantur, donec lixivium ita quoddam ex ijs extrahatur. Hoc lixivium ita paratum ingentibus lebetibus in officinis aluminariis exstantibus infunditur, ubi magna aluminis vi ulterius castigatur donec maxi-*



mè effervesceat. Deinde vero per canales in hunc usum adornatos in receptacula quedam ex lignis confecta deducitur; in quibus postea in alumen minutum, quod Aluminarij Saffian vocant, congelascit & concrefcit. Ultimo vero, secunda vice hoc minutum alumen collectum lebetibus infertur, ac denuo coquitur; tandemque peracta cōctione resolutum deducitur rursus per canales in ampliora vasa lignea rotunda, in quibus tandiu relinquatur frigesactum consistentiam debitam nanciscatur. Et hic est usitatus in Scania Alumen præparandi modus. Dr. Leopold.

v. 8. Lapis aluminarius calcinatus. Dr. Leopold.

v. 9. A Salt of a very pale brown Colour, near white, found in scabrous Masses, some of the Bigness of a Chestnut, others larger; having a very sharp styptick Taste, in some Parts like that of Alum, in others like that of white Vitriol. Dug up in Virginia. Mr. Byrd.

v. 10. Vitriolum album nativum, à montibus circa Sylvaniam Agri Romani. Hujus salis varias passim Massulas ex Rivulorum Aquis, solis astu elicitas observavit M. Ol. du Mont. Who gave me this.

v. 11. Vitriolum album nativum. From the East-Indies, where it is commonly call'd by the Natives, Moordar Singy. Fort St. George. Mr. Bulkley.

v. 12. Vitriolum album nativum Goslarie. Dr. Scheuchzer.

v. 13. Vitriolum nativum album striatum. From the Gold Mine of Cremnitz in Hungary. 'Tis found along with the striated Antimony and the Gold-Ore, about 300 Fathom deep. 'Tis very white when first taken forth: and the Striz, or rather Threads, run a-cross the Veins.

v. 14. Vitriolum nativum album striatum, viridi leviter tinctum. Ex fodina Schemnitz Hungaria. M. Oliv. du Mont.

v. 15. Vitriolum nativum viride Hassiacum. Dr. Leopold.

v. 16. Vitriolum nativum viride. Ex Aurisodinis Hungaria juxta Cremnitz. 'Tis found thus in great Quantities in the Veins: sometimes shot into angular Figures: and frequently hanging down in Form of Stalactitæ. This Vitriol, that is green, is only found in those Veins where the Ore has in it Iron together with the Gold. Whereas the native white Vitriol of the Gold-Mines near Cremnitz, is found only in those Veins that contain no other Metal besides Gold. In the Copper-Mines of Neißol in Hungary, in the Veins along with the Copper-Ore is found blue Vitriol in Form like this: and sometimes shot into angulated Figures, and into Stalactitæ; both of a fine Sapharine blue Colour.

v. 17. The Stone on which the natural Vitriol shoots in the Mines of Schemnitz in Hungary. Dr. Edward Brown. 'Tis of a dusky grey Colour: and has in some Parts, green Vitriol, in others a yellow sulphureous Efflorescence concieted upon it.

v. 18. Native green Vitriol out of the Silver-Mine of Schemnitz in Hungary. Dr. Edward Brown.

v. 19. Native green Vitriol. Brought from Goslar by M. Ol. du Mont.



v. 20. *Vitriolum ex vena juxta Lacum Tigurinum*. 'Tis green in some Parts, in others blue; and shot into angulated Figure of different Forms. Dr. Scheuchzer.

v. 21. Native blue Vitriol. *Cyprus*. M. Ol. du Mont.

v. 22. *Vena Vitrioli, ex Alpibus in Ditione Suitensi*. Dr. Scheuchzer.

### Bituminosa. The Bituminous Fossils.

§. 1. The true Bitumen of *Judea*, brought from the *Lacus Asphaltites*, or the Dead Sea, by Mr. Henry Worsely. On the Shore of the Lake Asphaltites, or the Dead Sea, we found a black Sort of Pebbles, which, held to a Candle, burns and yields a Smoak of an intolerable Stench. They lose of their Weight, but not of their Bulk, by burning. The Hills bordering on the Lake abound with this sort of sulphureous Stones. I saw Pieces of it 2 Foot square, black, and taking a Polish like Marble. The Bitumen is gather'd near the Mountains in great Plenty. It exactly resembles but has a sulphureous Smell and Taste. Maundrell's Journey from Aleppo to Jerusalem. p. 82, 83.

§. 2. The yellow Prussian Amber, having Flies in it.

§. 3. Amber with a greenish Cast, from the Shores of the Island of *Jamaica*.

§. 4. Several small Nodules of Amber, found amongst a great Number of others, and some larger, upon the Shores near *Tangier*. I remember, Sir Henry Sheers told me, that at the demolishing the Mole there, several Rocks were torn and blown up: in which he observed Pieces of Amber lodged. Mr. Robert Ball has a Piece of it; and as I remember, actually lodged in a Piece of Stone. This is an additional Proof that Amber is as much a real Fossil as Flints, and the other Nodules are: and that the Sea serves, by its Agitation, only to fetch it forth of the Cliffs, and uncover it. See *The natural History of the Earth*, 2d Edit. Part IV. p. 217. and seqq. Those of them which are cut, appear to be of a yellow Colour, with a Cast of Green. But they are invested outwardly with a Crust, scabrous, and rugged: of a dusky brown Colour externally, and red within; which makes those, that have it yet on, appear to be of a reddish Colour.

§. 5. *Carbo Petreæ Halæ Magdeburgensis*. Stein Kohlen, i. e. Stone Cole. [It lies in Beds, *Stratum super stratum*, in great Plenty 20 Fathom deep. They burn it commonly. There are other Coal-pits at *Isleb*, at the Distance of 4 Miles from *Hall*. Mr. Weber.] 'Twas sent me by M. de Schonberg.

### Mineralia Metallis affinia, Metallick Minerals.

SEC T. I. *Cinnabaris, seu Minium verum nativum*. Cinnabar.

o. 1. Cinnabar of a brown or tawney Colour, thick set with very small shining Sparks. From *Augsburg*. Sir Isaac Newton. It has but little Quick-Silver in it: but may hold about  $\frac{1}{8}$  Silver, with a little Gold.

o. 2. Cinnabar of a black Colour, holding Quick-Silver and Silver. From *Georgenstadt* in *Saxony*.

o. 3. *Vena Mercurij Carinthiaca*. Dr. *Scheuchzer*.

o. 4. *Vena Cinnabaris, cum fluore atro-rubente*. Ex *Hungaria*. *M. de Schenberg*.

o. 5. *Cinnabaris Hungarica*. *Zinnober-Ertz*. *M. de Schonberg*.

o. 6. *Anthrax, sive Vena Minnij Schemnicensis Hungarica, cum Fluore & Marcasitâ juncta*. Dr. *Leopold*. There is also in this Mass, Lead-Ore holding a little Silver. About *Rosenburg* in *Hungary*, is the most considerable Tract of all *Europe* for Cinnabar. It is found upon the Sides of great Hills. The poor People collect it after Rains, which clear and uncover it. It lies chiefly in a whitish sparry Stone: and sometimes in Sand-stone. At *Bartfeld*, and *Seben* in *Upper Hungary*, they sink Mines for Silver and Cinnabar. They are incorporated in the same Mass: and lie in Bellies, but run likewise into Strings.

o. 7. *Cinnabaris cum fluore albo juncta*. *Fryberga Misnia*. Dr. *Kisner*.

o. 8. *Minium nativum, Aurum continens, cum fluore mixtum*. Ex vena trium Regum *Fodini Schemnicensis* in *Hungaria*.

o. 9. A Body compos'd chiefly of white Spar, but having some Cinnabar, and Marcasite, along with it. Upon Trial, besides Mercury, it yields some Silver: and is a sort of *Rotguldener-Ertz*. Brought from *Hungary* by *M. Ol. du Mont*.

o. 10. *Cinnaberis atro-fusca cum Scintillis passim micantibus*. Out of the Silver-Mine at *Schemnitz*. The Silver-Ore is found in Veins: and this Cinnabar along with it. This holds some Silver in it, and a little Gold. It has little Quick-silver in it, so that they rarely extract that.

o. 11. *Rotguldener-Ertz*. Brought from *Hungary* by *M. Ol. du Mont*.

o. 12. Cinnabar, red; with small Masses of white Spar amongst it. From *Augsburg*. Sir *Isaac Newton*.

o. 13. Cinnabar red, from the same Place, more fine, clear, and sparkling. Sir *Isaac Newton*.

o. 14. *Minium nativum*. *Berg Zinnober*. Dr. *Scheuchzer*.

o. 15. *Minera Mercurij ex Bohemia*. Quicksilver oder *Zinnober-Ertz*, i. e. Quick-silver or Cinnabar-Ore.

o. 16. Cinnabar. From the *East-Indies*. 'Tis rich, yielding 7 in 8 of Mercury.

o. 17. Cinnabar. From the *East-Indies*. Mr. *Bulkley*.

o. 18. Cinnabar. Out of a River, in *Hungary*. Sir *Isaac Newton*.

o. 19. *Cinnaberis Carinthia*. This is very rich, and will yield  $\frac{3}{4}$  Quick-silver, or perhaps more.

o. 20. Cinnabar. From *China*, where 'tis call'd *Hiung-hoang*. Vide *Atlant. Sinic. Martinij*. p. 43. Mr. *Cunningham*.

o. 21. Another shining Sort of Cinnabar, lying in Plates. From *China*. Mr. *Cunningham*.

o. 22. Cinnabar, red, glossy, and glaring. Some few Pieces of it very much resemble the flakey Talc, the rest appears to be composed of parallel Fibres, like the filamentose Talc. *China*. M. Cunningham, Surgeon. Given to me by Mr. Matthews.

SECT. 2. Arsenicum, *Arsenick*.

\* o. 1. Arsenick, very white. 'Tis a very deadly Poison. The *Gentous* call it *Tella Paschnum*. Held to the Fire it emits Fumes; but liquates very little.

\* o. 2. *Minera Arsenici alba. Swartzburgensis. Weiser Arsenick Kies*, i. e. a white Arsenick Marcasite. M. de Schonberg.

\* o. 3. *Auripigmentum*. Native yellow Arsenick, with Veins of red Arsenick, and glossy Talc-like Flakes; found near *Newsohl*, in *Hungary*, in great Quantity. They dig up Pieces as fine, and some finer than this of two and three hundred Pound Weight. 'Tis soft like *Castile Soap* when first dug up. It lies in Masses in Clay. The Flores of this being melted, become transparent, and of a fine red Colour. There is nothing else got in the Pits; nor is it usually found in any of the Mines of Metal in *Hungary* or *Saxony*, 'Tis found from 10 to 30 Fathom deep.

\* o. 4. Orpiment, small, in form of Powder, otherwise not different from the precedent. 'Tis found in the same place with that: and generally above it; being mingled with Clay in the Strata, from which 'tis parted by washing.

\* o. 5. Yellow Orpiment. From the *East-Indies*.

\* o. 6. Oriental Orpiment, very fine, yellow, both flakey and stringy. From *Turkey*.

\* o. 7. Arsenick of a duller yellow, and without any shining Flakes in it. From *Pegu*, where 'tis call'd *Hartoll* \*. Being held to the Fire it burns, liquates, and emits arsenical Fumes plentifully. Mr. Bulkley.

\* o. 8. Another like-sort of Arsenick from *Pegu*. The *Gentous* call it *Taulacum*. After it has several times pass'd the Fire, they give it in intermitting Fevers. Held to the Fire it fumes; and liquates, but not so freely as the precedent. It has in it glossy Flakes, like those in the *Hungarian Orpiment*.

\* o. 9. *Aridullam* used in intermitting Fevers. 'Tis of a yellow Colour. It holds a small proportion of Arsenick.

\* o. 10. Arsenick; held to the Fire it liquates, and emits Fumes partly arsenical, and partly sulphureous: *Hungary*. This is native; and what *Agricola*, and the other *German Mineralists* call the red Arsenick. And it is of a Colour much deeper than that of the common Orpiment, tho' not red; but of a yellow very high, with a Cast of red. Dr. Edward Brown.

\* *Hartoll* is the Name by which Arsenick is call'd over the greatest part of India. Mr. Terry.

\* 0. 11. Arsenick of a deep yellow Colour vein'd with red and white. From *Fort St. George*, where 'tis call'd *Goury pasbnum*. 'Tis found at the bottom of a Mountain. Being calcined, they give it in Asthma's; and use it outwardly for the Itch. Mr. *Weaver* tells me he has seen some of the same sort, dug out of the same Mine with the yellow, \* 0. 3. *supra*.

\* 0. 12. Arsenick, of a paler red Colour. From *Fort St. George*, where 'tis call'd *Woolly pasbnum*.

\* 0. 13. *Elica pasbnum* has the same Virtues with *Munny Shella*,

\* 0. 14. *infra*; and seems to be of the same kind. *Fort St. George, East-India*.

\* 0. 14. Arsenick, red, with very small glossy shining Sparks in it. From *Pegu* by the name of *Munny Shella*. They give this in Fevers after Calcination, by which means the venenate Parts are carried off. In burning it liquates, and emits arsenical Fumes plentifully. Is not this the *Σανδαράχη* of *Dioscorides*, and of the antient Naturalists?

### SECT. 3. Sulphur.

\* 0. 1. Native Sulphur brown, dug up thus in Lumps at - - - - - in *Hungary*.

\* 0. 2. Native Sulphur brown, dug up near the Gold-Mines in *Hungary*.

\* 0. 3. Another sort, with a Cast of Lemon-colour; from the same Place.

\* 0. 4. A grey hardned Earth with Veins of a bright shining Lemon-colour'd Sulphur. Sent by Dr. *Scheuchzer* under the Title of *Vena Cretacea Sulphurea Scandiana in Italia*.

\* 0. 5. Sulphur, native, very fine, of a paler yellow Colour. From the same Place. Dr. *Scheuchzer*.

\* 0. 6. *Sulphur Virgineum quod effoditur propè Baëtiacum in Territorio Bernensi. Wagneri Helv. Cur. p. 334.* Dr. *Scheuchzer*. 'Tis extremely pure; of a Lemon-colour, with a faint Blush of Green: and transparent.

\* 0. 7. Sulphur, native, extremely pure; from *Persia*. 'Tis of the same Colour with the precedent: and transparent likewise.

\* 0. 8. Native Sulphur, very fine; somewhat more tender and friable, otherwise little different from the *Persian*: found on the Top of the *Pico*, in the Island of *Tenariffe*.

\* 0. 9. Native Sulphur of a Lemon-colour, and very fine; found in Nodules in the Gold-Mine in *Hungary*.

\* 0. 10. *Sulphur purum nativum à Foro Vulcanio, agri Neapolitani*. 'Tis of a Lemon-colour; and very fine.

\* 0. 11. *Sulphur nativum stalacticum purissimum*.

\* 0. 12. *Sulphur stillatitium nativum ex Monte Rammelsberg dicto, Sylvia Hercinie*. Dr. *Leopold*.

\* 0. 13. Striated Sulphur, and of a pale yellow Colour, near white; very light, tender and friable. From the Stone-Channels that convey the Water from the Springs to the Baths at *Aix-la-Cha-*



*Chapelle.* The Water precipitates a considerable Quantity of it in a little time, affixing it to the sides of the Channels. There is sometimes found common Salt concreted amongst it. These Waters are rather hotter than those of *Bath*.

\* 0. 14. *Minera lapidea cui Sulphur nativum solum peculiari gypseo Saxo inhaeret.* Sent by *Mich. Rheinoldus Rosinus, Munda-Saxo.*

#### SECT. 4. *Pyrita.*

† 0. 1. A Pyrites, externally partly of a pale brown, and partly of a Rust-colour. Being broken, it appears within of a yellow Colour, bright and shining like Brass. 'Twas, whilst whole, of a globous Form; and striated from the Surface towards the Center. It does not differ in any thing from those commonly found in the Chalk-pits of *Kent, Surrey, and Essex.* 'Twas sent me by *M. de Schonberg* with the Inscription, *Marcasita globosa, Marieberga in Saxonia. Kuglichter Marcasit, i. e. a globular Marcasite.*

† 0. 2. *Marcasita in lapide luteo arenoso. Friberga in Saxonia. Marcasit in gelben Sandstein, i. e. a Marcasite upon a yellow Sandstone. M. de Schonberg.*

† 0. 3. *Pyrites Metallicus Succu atramentosi parens in saxo arenario propè Lithopolim. Dr. Scheuchzer.*

† 0. 4. *Lapis niger adulterinus. Eibensstock in Saxonia. Schaarl. M. de Schonberg.* A Pyrites holding sometimes a little Gold and Silver.

† 0. 5. *Pyrita ex agro Tubigensi, juxta Metzingen, quatuor horis à Francofurto. Dr. Kifner.*

† 0. 6. A Pyrites of an oblong cylindrick Shape; at one end tuberosous, and shot into numerous angular Figures. Found near *Nieufchatel. M. Valkenier.*

† 0. 7. A Pyrites, brownish with a Cast of green, and small shining Brass-like Sparks; very like the common Pyritæ on the shores of *Kent and Essex.* Found near *Nieufchatel. M. Valkenier.*

† 0. 8. *Marcasita aurum in se continens. Nainburga in Saxonia. Guldischer Marcasit, i. e. a goldish Marcasite.*

† 0. 9. Black Slate, with very small bright brassy cubick Pyritæ lodged in it; found by *Bern-Castle, near the Moselle. Dr. Kifner.*

† 0. 10. A Pyrites. When it was intire it was large, and of a cubick figure. 'Tis in a Stone, grey with a Cast of green. These Pyritæ are found immerfed in the Substance and Mass of the Stone when broken up in the Rocks in *Cataline's-Harbour, Newfoundland. Mr. Peighin.*

† 0. 11. Two cubick Pyritæ, large; from *New-England. Mr. Bridger.*

† 0. 12. One less, from *Hamburg, by the name of Marcasita aurea. Sir Isaac Newton.*

† 0. 13. Another from the Gold-Mine of *Caunia, about 60 miles East-ward of Santa Maria, in the West-Indies.*

† 0. 14. Tessellated or cubick Pyritæ, sent from *Fort St. George* by *Mr. Bulkeley.* They are found in a great Hill. The *Gentous* call



them *Vimmala*. After having pass'd the Fire several times, they give the Powder in intermitting Fevers.

† o. 15. *Pyrita metallares Cubici, ex Fontibus Rheni Anterioris in Rhetia.* Dr. Scheuchzer.

† o. 16. *Pyrita exigui Cubici ex Fluvio Nolla in Rhetia.* Dr. Scheuchzer.

† o. 17. *Pyrita cubici ex Grisonensium montibus.* M. Valkenier. Water-Kis.

† o. 18. *Pyrita cubici minuti, in Lapide gryseo Talci particulis micante. Ex iisdem montibus.* M. Valkenier.

† o. 19. Irregularly polyedrous Pyritæ; of a dusky green Colour, with a Cast of yellow. Mr. Bulkley. Fort St. George, East India.

† o. 20. The common tessellated Pyrites, now of a Rust-colour. From ----- in Saxony; whence twas sent to Sir Isaac Newton, as the *Ludus Paracelsi*.

† o. 21. *Marcasita. Fribergæ.* Marcasit. M. de Schonberg.

† o. 22. *Pyrites dodecaedros, ex monte Dair vallis Pragallia in Rhetia.* Dr. Scheuchzer.

† o. 23. *Pyrites dodecaedros, ex montibus Novocastrensis Helvetia.* M. Valkenier.

† o. 24. *Pyrita dodecaedros ex Ditione Bernensi.* Dr. Scheuchzer.

† o. 25. *Marcasita tessalata Saxonica.* Dr. Kifner. 'Tis not cubick, having really 14 Sides.

† o. 26. *Vimmala.* 'Tis first calcined, then prepared with the Juice of divers Plants, and given in intermitting Fevers. Mr. Bulkley. Fort St. George.

† o. 27. *Vimmala.* Others, irregularly shot; of a shining yellow brassy Hue. Fort St. George.

† o. 28. A Pyrites, shot into angular Figures, very fine; from the Mountains near *Nieufchatel.* M. Valkenier.

#### SECT. 5. *Marcasita.*

† o. 1. A Marcasite crystallized in a very observable manner; bright and shining like Brass: from *Newfoundland.*

† o. 2. *Pyrita dodecaedros aureus, ex monte Dair Rhetia.* Dr. Scheuchzer.

† o. 3. A Marcasite, yellow, shining, and shot into cubick Figures: Mr. Bulkley sent it from Fort St. George by the name of *Vemullay.*

† o. 4. *Marcasita, Martisburgi in Saxonia.* Glantz, i. e. Gloss, or Glitter. M. de Schonberg.

† o. 5. *Marcasita spongiosa, qua micat, mixta cum argento rubro; Fribergæ in Saxonia.* Kupfer-Ertz Druse, rothgültig Ertz eingeprenget, i. e. Copper-Ore Druse, with red goldish Ore intermixed. M. de Schonberg.

† o. 6. Marcasite; of this there are great Quantities at *Schwartzenberg* in Saxony. They melt it for Sulphur; and out of the *Caput Mortuum*, after it has been expos'd some time to the Air, they extract Viriol. One sort of the *Cornish* Mundick is exactly like this.

† o. 7.

- †.o. 7. A Marcasite; from Biscay in Spain.
- †.o. 8. *Lapis sulphureus in terra nigricante*; Swartzenburga in Saxonia. Gelber Kies mit einer Schwartze, i. e. a Marcasite yellow, with a Blackness. M. de Schonberg.
- †.o. 9. *Pyrites Hungaria communis*. Brought thence by M. Ol. du Mont.
- †.o. 10. *Marcasita alba in medulla saxi*; Swartzenburga in Saxonia. Weißer Marcasite in Steinmarck, i. e. white Marcasite in Stone-marrow. M. de Schonberg.
- †.o. 11. *Lapis sulphureus super pellucidum silicem*; John-Georgenstadt in Saxonia. Schwefelkies auff durchsichtiger Quartz, i. e. a Sulphur Marcasite upon transparent Quartz, a sort of Spar. M. de Schonberg.
- †.o. 12. *Lapis sulphureus, a Geijer Bohemia*. M. de Schonberg. [Tis work'd for Sulphur. Mr. Weber.]
- †.o. 13. A grey Spar, with some parts crystallized, and Grains of Marcasite yellow and shining intermixed. From the Gold-mines of Caunia, about 60 miles eastward of Santa Maria, in the West-Indies. It has some Gold in it.
- †.o. 14. A white Spar with Marcasite adhering to it; sent by Dr. Leopold with the Inscription, *Drusa S. Pyrites dipicolor Clausenthalensis*.
- †.o. 15. Stone, grey with a Cast of green; having Marcasite, and a little Spar, adhering to it. Sent from New-England, by Mr. Bridger.
- †.o. 16. *Kies*, a Marcasite brought from Hungary, by M. Ol. du Mont. [Upon Tryal this yielded only a very inconsiderable Proportion of Copper and Lead; but no Silver or Gold.]
- †.o. 17. *Excrecentia marmoris metallici super Minera*. Marieberge in Saxonia. Spaadn Gewachs auff Glimmer, i. e. Spaad Excrecence upon Glimmer. M. de Schonberg. [This is a Marcasite adhering to a Mica. There are upon it several small cubick Crystals, of a yellow Colour very beautiful. These owe that Colour to Lead. Also two sparry or talky Bodies, white, composed of Plates set edgeways.]
- †.o. 18. *Pyrites cavernosus, qui à Philosophis pro radice & matre metallorum judicatur*. Friberg in Saxonia. Kies Druse, so von Philosophis pro radice & matre metallorum gehalten wind, i. e. a Marcasite Druse which was taken by the Philosophers, for the Root and Mother of Metals. M. de Schonberg. This is what M. Ol. du Mont travelled so long in pursuit of. I have of this very kind of Marcasite from Cornwall.
- †.o. 19. *Pyrites, Tabulatus varij Coloris*. Friberg in Saxonia. Bunde blätterichte Kies Druse; i. e. a speckled foliaceous Marcasite Druse. M. de Schonberg.
- †.o. 20. *Cupreus Nicolaus*. Sneberg in Saxonia. Kupfer Nicol; i. e. Copper-Nicol. M. de Schonberg.
- †.o. 21. A Copper Marcasite, sent by M. de Schonberg with the Inscription, *Pyrites ex quo coquitur Cuprum & Vitriolum*. M. de Schonberg.

zenburga in Saxonia. Kupffern und Vitrioln Kies; i.e. a Copper and Vitriol Marcasite. It may hold about  $\frac{1}{10}$  Copper.

†.o. 22. *Lapis argenti spuma splendens.* Ehrenfreidersdorff in Saxonia. Misspuckle. M. de Schonberg. [This is a Marcasite, holding a little Copper, Tin, Iron, Sulphur, and Arsenick. Mr. Weber.]

†.o. 23. A Tin Marcasite, sent by M. de Schonberg, with the Inscription, *Stannum cum Pyrite.* Johann Georgenstadt in Saxonia. Kiefsichter Zwitter; i.e. Marcasitish Tin-Ore.

†.o. 24. *Galena Argenti.* Friberg in Saxonia. Blende. This is the true Blende, being a black, talky, sparry Marcasite. It may hold a very little Lead, and perhaps Silver. M. de Schonberg.

†.o. 25. *Wicrantum.* 'Tis a very hard Stone, and commonly found within other Stones, by breaking them; when calcined, 'tis given inwardly, and provokes Venery, as they say. Mr. Bulkley. ['Tis the Blende, or Mock-Lead: and appears of a talky Hue.

†.o. 26. *Nelanjenum.* 'Tis found at the bottom of Rivers; prepared by Fire, and with the Juice of Herbs: 'tis used for Ulcers. 'Tis a blackish talky Body, thick set with small shining Sparks, so as to resemble the Grain of broken Steel. 'Tis very ponderous. [There is a sort of Lead-Ore very like it: but I cannot perceive any Lead in this.] Mr. Bulkley.

†.o. 27. *Poospanscum.* It grows, and is used as the former; and is also used to colour grey Hairs, and make them black. 'Tis less ponderous than the former, but more flakey, shining, and friable. Mr. Bulkley.

#### SECT. 6. Cobalt, Kobelt.

†.o. 1. Cobalt, from Marienburg in Saxony, of a yellow brassy-like Appearance. There's a Mass of white Spar in it. One sort of the Cornish Mundick, found there in vast Quantity, exactly resembles this. This sort yields chiefly Bismuth: about 6 Parts in 10. They do not work it for Smalt, it having none of the purple Spar in it, which alone constitutes the Smalt. It lies in Veins in great Quantities, about 40 or 50 Fathom deep. These Mines are work'd for nothing else.

†.o. 2. Cobalt, more coarse, and gritty. From Saxony.

†.o. 3. Cobalt. Annaberg in Misnia. M. Ol. du Mont.

†.o. 4. *Cadmia Metallica Coloris subcaerulei.* Ex Monte D. Andrea. Dr. Scheuchzer.

†.o. 5. *Cadmia Fossilis cum galena pici similis.* Friberg in Saxonia. Gelber Kobold mit Schwartzzer Blende; i.e. yellow Cobalt, with black Blende. M. de Schonberg.

†.o. 6. *Cadmia cinerea in marmore Metallico albo.* Annaberg in Saxonia. Kobold in weissen Spad; i.e. Cobalt in white Spad. M. de Schonberg.

†.o. 7. *Cadmia cum minera Bismuthi.* John-Georgenstadt in Saxonia. Grauer Kobold mit Wismut, i.e. Grey Cobalt with Bismuth. M. de Schonberg.

†.o. 8.

† 0. 8. *Cadmia cum cupreo Nicolao. Sneberga in Saxonia.* Farben Kobold mit Kupffer Nicol, i. e. Colour Cobalt with Copper-Nicol. *M. de Schonberg.* [The greenish Crust is what they call Nicol: and abounds in Arsenick: and is very injurious to the Smelters, causing Contractions of their Limbs. *Mr. Weber.*

† 0. 9. Cobalt from *Seberg in Saxony.* 'Tis grey: and Part of it shot into Crystals of a Purple Colour. 'Tis found in Veins, in great Quantity, from 60 to 100 Fathom deep. These Mines are only work'd for this Mineral. It holds chiefly Bismuth.

† 0. 10. *Cadmia fossilis ex qua praparatur Zaffera. Anna-berga.* Farben Kobold, i. e. Colour Cobalt. *M. de Schonberg.* [Cobalt is an Arsenical Marcasite, and all of it contains more or less of Arsenick. *Mr. Weber.*]

† 0. 11. Zaffar, native from ----- in Germany. Us'd by the Potters and Painters.

† 0. 12. Zaffer, native, a smaller Sort from the same Place.

#### SECT. 7. Lapis Calaminaris, Calamin.

⊙ 0. 1. *Cadmia praparata ad confectionem Orichalchi utilis.* This is of that Kind, and was sent me also by *M. de Schonberg*; only it is calcin'd.

#### SECT. 8. Antimonium, Antimony.

‡ 0. 1. *Antimonium, seu Stimmi foemina, Plinij, l. 33. c. 6. Ex altissimo Monte ad Origines Rheni.* Dr. Scheuchzer.

‡ 0. 2. *Antimonium nativum griseum, cum Scintillis spississimis, Hungaricum.* From *Leibschersuffen.* Found in Veins among Copper and Iron-Ore, in the Day downwards, in great Quantity.

‡ 0. 3. *Minera Antimonij partim in laminas fissilis, partim Scintillis conspicua. Habet insuper in se Venam Fluoris Candidi. Ex fodinis in Germania.*

‡ 0. 4. *Minera Antimonij, à Leibschersuffen in Hungaria.*

‡ 0. 5. *Minera Antimonij Hungarica à Leibschersuffen.* It is flat, having a thin Plate of a pale brown Spar, on each of the two opposite Sides: and appears to have been taken forth of a Vein. There is with it a considerable Mixture of Sulphur, yellow, with a Cast of green.

‡ 0. 6. A Body, grey, glossy, and shining; externally of a fibrous Constitution: and appearing to consist partly of Talc, and partly of Antimony. Within, there are some small Sparks and Grains of Lead. From the great Lead-Mine near *Widfabla* in Sweden.

‡ 0. 7. Native Antimony; from *Islandia.* Sir *Tho. Brown* procured this from *Theodorus Jonas*, a very curious and learned Ecclesiastic in that Island.

‡ 0. 8. *Antimonium Hungaricum crystallizatum in Terra lutea.* Dr. Scheuchzer.

‡ 0. 9. *Minera Antimonij Hungarica.* Spies-Glas; i. e. Spear-Glass, or Antimony. *M. de Schonberg.* [It is found in Quantity in the Gold-Mines of *Cremnitz*, in Veins, 300 or 400 Fathom deep. *Mr. Weber.*]



† o. 10. *Minera Antimonij Hayenensis, Saxonia.* M. de Schonberg.  
 † o. 11. Antimony-Ore, taken forth of a Mountain in *Piedmont*.  
*M. Ol. du Mont.*

† o. 12. *Minera Antimonij. Friberga in Saxonia. Antimonien Ertz.* M. de Schonberg. [This may yield about  $\frac{8}{10}$  of Antimony. The Ore of Antimony usually is found in Veins among the Lead: but lies generally shallow. Mr. *Weber*.]

† o. 13. White Spar, with a Vein of yellow, shining, brass-like *Marcasite* in the middle of it: and, on one Surface, Antimony, radiated, or shot into Filaments, very fine. *Ex Agro Mompelgartensi.* M. *Valkenier*.

† o. 14. *Minera Antimonij Hungarica, stellaris, & pulchrè striata: cum fluore etiam striato.* Dr. *Kisner.* à *Leibschersuffen*.

† o. 15. Antimony-Ore, yellow. *Cuttembergh, in Germany.* Brought thence by *M. Ol. du Mont.* The yellow Colour is owing, probably, to an Admixture of Sulphur.

#### SECT. 9. Bismuthum, Tin-Glass.

† o. 1. *Minera Bismuthi, sive Plumbi cinerej, cum Fluore.* *Bismut Ertz Agricola.* *Sneberga in Saxonia.* Dr. *Scheuchzer*.

† o. 2. *Minera Bismuthi, cum Fluore, Sneberga in Saxonia;* where much the greatest Quantity of this Ore is got, there being little of it in any other Part of *Germany.* Some of it has a fine Glance of Violet: and frequently much semi-transparent Spar in it.

† o. 3. *Cadmia Metallica. Annaberga in Saxonia.* *Kobold.* M. de *Schonberg.* [Cobalt in a white Spar; it holds a little Silver, but chiefly Bismuth, for which 'tis work'd: but never for Smalt or Blue. Mr. *Weber*.]

† o. 4. *Plumbi cinerei, sive Bismuthi Vena. Sneberga in Saxonia.* Dr. *Scheuchzer*.

† o. 5. *Minera Bismuthi. John-Georgen-stadt, in Saxonia.* *Wismut Ertz.* M. de *Schonberg.* [This holds above  $\frac{1}{2}$  Bismuth.]

† o. 6. *Minera Bismuthi; propè Snebergam, in Saxonia.* M. de *Schonberg.* [This is not so rich in Bismuth as the precedent.]

† o. 7. Bismuth-Ore. From *Sneberg, in Saxony.* M. *Ol. du Mont.* [This seems rather to be Zink.]

† o. 8. Bismuth-Ore. From *Sneberg in Saxony.* M. *Ol. du Mont.*

#### SECT. 10. Speltrum, Speltre, or Zink.

\*X. o. 1. Speltre, or Zink. From the *East-Indies.* Mr. *Nicholson.*

\*X. o. 2. A glossy, yellow, brass-like Body; sent by the Name of *Russgangenum*, from *Fort St. George*, by Mr. *Bulkley*, for an Antimony-Ore. I have seen a Talc, ponderous, and very like it in all other respects: as also a sort of *Marcasite*; but this has little or no Sulphur in it. It may perhaps be a Speltre-Ore. Mr. *Weber* is of that Opinion also.

\*X. o. 3. Sent by the Name of *Russgangenum.* Found in *Mount St. Thomas, Fort St. George.* Mr. *Bulkley.* This also Mr. *Weber* judges to be a native Zink.

\*X. o. 4.



·X· o. 4. *Argentum rude cineraceum in marmore candido Metallico (Spaas) ex Vena Sancti Michaelis, qua est Saalfeldia in Thuringia.* Dr. Leopold. The Ore of this is Zink, holding some Silver.

·X· o. 5. Speltre, or Tutanag-Ore, from China, with Veins of Spar in it. Tutanag runs in the Fire: but, if kept long there, it rises wholly in Flores. Copper-Plates, held over the Fumes of it, become throughout of a yellow Brass-Colour: and indeed this is the finest Brass that is made. Tutanag, melted with Copper in equal Quantity, makes an Alchymy, or blanch'd Brass; but, if held so long in the Fire that part of the Tutanag evaporates, it attains a yellow. Many of the Indian Images are made of this. Some of them are cast extremely fine.

·X· o. 6. Native Speltre-Ore, got in the Province of ----- in China. Mr. Douglass, then at Canton, caus'd it to be sent for thither on purpose. In China, and all over the Mogul's Country, and in several other Parts of India, they make a sort of Brass of Speltre melted down with Copper, of which there is plenty both in China and Japan, tho' there be no Calamine. Tutanag is the Chinese Name for Speltre: and we here apply that Name erroneously to that Metal of which the Canisters are made, that are brought over with the Tea from China. The Chinese call this Mineral Tutanag: nor indeed has that Metal any Tutanag or Speltre in it, being only a coarse Pewter made with the Lead, carried by our Merchants from England, and Tin got in the Kingdom of Siam, betwixt Tanassary and the Streights of Malacca.

·X· o. 7. Seeming to be Ore of Tutanag, sent by the Lord Constantine Falcon to Dr. Uvedale.

·X· o. 8. A Mineral, with numerous grey Sparks, shining, and of a metallick Appearance. Mr. Weber judges it to be Speltre. There is also amongst it a white Spar, with Spots of a fine bright blue, which are owing to an Admixture of Copper. From ----- in Germany. Mr. Valkenier.

## SECT. II. Nigrica Fabrilis, Black-Lead, or Wad.

‡ o. 1. *Lapis Plumbarius sterilis, cum quo scribi potest.* Altenberga in Saxonia. Wasserbley Erz; i. e. Black-Lead-Ore. M. de Schonberg. ('Tis the Nigrica Fabrilis, or Black-Lead.)

## Auri Mineræ, Gold-Ores.

π. 1. Gold, native, from Guinea, and just as wash'd and freed from the Spar, Sand, and Soil. 'Tis very fine, flexible, and malleable: and so pure, that it rarely loses above 1 and  $\frac{1}{2}$  or 2 Parts in 100 in Fusion. 'Tis partly in form of Dust; for which Reason this is commonly call'd Dust-Gold: and partly in Lumps or Nodules, of all Sizes, to the bigness of the common Field-Bean. Nay, one Lump there is at least four times that Bigness: and this was indeed the biggest in the whole Parcel. I had of the Royal African Company, and was inform'd they once had a Lump that weigh'd somewhat above 3 Ounces. Mr. Charles Hayes, in his Letter

Letter from *Cape-Coast* in *Guinea*, 9 Febr. 1704, mentions one he saw there that weigh'd 4 Ounces  $\frac{1}{2}$ : and that he had Accounts of much larger found in those Parts. These larger Lumps they call *Rock-Gold*. All the Gold in this Parcel is of a deep yellow Colour. Only one of the Lumps has externally a Cast of Red; which, probably, is owing to the Soil in which it lay: the Gold in that Country, according to the Account that Mr. *Hayes* obtain'd, being found in a Stratum of red Earth, that lies horizontally. The Country is seven Days Journey from *Cape-Coast*. So far Mr. *Hayes* his Account: but 'tis certain a great part of the Gold of that Country is wash'd out of the Mountains by the Falls of Rains, which there are vastly great, and fall with a mighty Force. The biggest Lump in this Parcel has 3 or 4 Grains of a white semi-pellucid Spar incorporated with it. The Surface of this, and indeed of most of the larger Lumps, is very scabrous and uneven. The *Guinea* Gold yields ordinarily 97 or 98 per Cent. Mr. *Hayes*.

π. 2. *Flammula, seu Particula Auri purissimi, reperta in Flumine Schwarza prope Rudelstadt, Civitatem Comitum ac Principum Schwarzburgicorum*. M. de *Schonberg*. 'Tis native, and found in considerable Quantity. Mr. *Weber*.

π. 3. Sand, so very fine as to be almost impalpable, of a very dark grey Colour; but shining and glittering, not much unlike the Filings of Steel. Being view'd with a Microscope, there appear in it numerous small Grains of Gold, shining, and of a yellow Colour: and indeed some of them are so large as to be discern'd by the naked Eye. This was found on the Shores of the *Danube*, between *Presburgh* and *Comorrah* in *Hungary*. The People that collect, wash, and dress it, find the greatest Quantities of it after great Rains, and melting of the Snow upon the Mountains, about *Cremnitz*, where the great Gold-Mines\* are. The Rain, and Snow-Water, falls down from those Mountains by the *Waag*, *Neytra*, *Gran*, and other Rivers, with so great Rapidity, as not to suffer the Gold-Dust to settle and precipitate in them, nor till 'tis brought to the *Danube*.

π. 4. *Arena Aurifera, ex Ursâ amne*. Dr. *Scheuchzer*.

π. 5. *Aurum purum Fossile ex Hungaria*. Dr. *Scheuchzer*.

π. 6. Gold, native, yielding 98 or 99 per Cent. Got by the *Portuguese* in the Mines of *Rio Jeneiro*, in *Brazil*. 'Tis better and finer than the Gold of *Guinea*. Mr. *Hayes*.

π. 7. Gold, native, also from *Rio Jeneiro*. 'Tis of a somewhat more dusky Hue, but yields as much as the former. Mr. *Hayes*.

π. 8. Dust-Gold. From the River ----- in *Hungary*. Mr. *Chishull*.

π. 9. Virgin-Gold, very fine, only wash'd. Out of the Vein of a Mine near *Hermanstad*, [*Cibinium*] in *Hungary*. Mr. *Chishull*.

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\* See Dr. Edward Brown's Account of them, in his *Travels*, p. 62 & seq.

π. 10. A grey Stone, part of the Side of a Vein, with Spar adhering to it: as also Gold, yellow, and fine. From the same Vein.

π. 11. *Aurum, lotum, ex Fluvio Edder; Comitatus Waldeckensis.* Dr. Kifner.

π. 12. *Goldſſich, ex Rivulo Katzbach, prope Goldbergam in Sileſia. In hoc Rivulo reperiuntur Granati, Aurum, Argentum, Cuprum: uti & Ferrum Magnetis Ope extrahendum & ſeparandum.* Dr. Kifner.

π. 13. *Minera Auri, cum admixta Particula Cinnaberis nativæ. Ex Fodinis Cremnizensibus, Hungariæ.* Dr. Leopold.

π. 14. *Minera Auri, ex Fodinis Schwazensibus, Comitatus Tyrolensis.* Dr. Leopold.

π. 15. *Terra Solis nigricans, ex Monte Eubro, prope Elverfeldam.* Dr. Leopold.

π. 16. Grains of Gold, in Sand-Stone, grey, variegated with a faint Green and Blue. From the Mine of *Coſta-Rica*, about twenty Miles from *Guatimala*. This is not reckon'd rich: but every hundred Weight yields about an Ounce of Gold. The Gold is found in certain Parts of the Stone, lying in Tracts, which the Miners call *Veins*, in much greater Quantity. This is the common Stone. They ſtamp and beat it to pieces with Water-Mills, waſh, and manage it after the ſame manner as at *Caunia*. During the Season of their great Rains, they expoſe the Stone to the Weather; which ſoftens it, and renders it eaſier to be worked upon. This was given me by Mr. *Morgan*, --- to Capt. *Dampier*, in his laſt Expedition to the *South-Seas*. He tells me they find very large Grains of Gold in this Mine: ſometimes to half an Ounce in weight. The Vice-Roy of *Lima* has a Maſs of pure Gold, twenty-five Pounds in weight, from the Mines of *Sancta Maria*, which are the richeſt in all the *Weſt-Indies*. The Gold lies there in Stone much like this: and is worked after the ſame manner. They have there lately diſcover'd a new Mine that is richer than the old.

π. 17. Grains of Gold, in Stone, of a ſomewhat finer Conſtitution, Grey, with a Caſt of Green, and ſome Spots of Blue. From a Mine about a League from the former.

#### Argenti Mineræ, Silver-Ores.

p. 1. Silver, native, pure, flexible, and malleable; arboreſcent, ariſing, in Form of a Shrub, out of a grey Spar. 'Tis  $\frac{3}{4}$  of an Inch in Height. From the Mines of *Koningsberg*, in *Norway*.

p. 1. \*. Silver, native, in white Spar. Out of the *Hercynian* Foreſt. Dr. *Hugo*.

p. 1. x. Silver, native, in a Vein of grey Spar. *Freyberg, Saxony.* Dr. *Arnold* of *Exeter*.

p. 2. *Argentum ut Gramen excreſcens. Fribergia in Saxonia.* Silber Graiſ. M. de *Schonberg*. [It is found in ſmall Quantities among the Spar of the Veins. 'Tis found in the like manner at *Schemnitz* in *Hungary*. Mr. *Weber*].

p. 2 \*. *Argentum capillare, virgineum, in Fluore albo & crystallino.* Freyberg. Dr. Mylins.

p. 2 \*. *Argent. capill. in Fluore albo. Ex Puteo S. Andreae Schneeberg.* Dr. Henckell.

p. 2. † *Argent. capill. inter Laminas Fluoris crystallini.* Freyberg.

p. 3. *Argentum more capillorum natum Sneberga in Saxonia.* Haar Silber, i. e. Capillary Silber. M. de Schonberg. [It is tinged yellow with Sulphur. 'Tis found plentifully. Mr. Weber.]

p. 4. *Argentum more capillorum natum in albo marmore metallico & fissili cinereo. Fohn-Georgenstadt in Saxonia.* Haar Silber in weißem Spaad, und grauschwartzlichen Schiefer, i. e. Pure native Silver, capillary, in white Spaad and dark grey Silver. M. de Schonberg.

p. 4 \*.  
p. 5. *Argentum nativum capillare Hungaricum.* Schemnitz. Dr. Leopold.

p. 6. *Argentum rude purpureum Hungaria.* Schemnitz. Dr. Leopold. This is very rich.

p. 7 *Argentum capillare in lapido argentario albo cum micis sulphureosis & crystallis minutis. Fohn-Georgenstadt in Saxonia.* Haar Silber auf weißgültigen Silber-Ertz mit etwas Schwefelkies und kleinen Quartzn Crystallen, i. e. Capillary Silver upon a fine white goldish Silver-Ore, with some sulphureous Marcasite and small Quartz-Crystals. M. de Schonberg.

p. 8. *Lapis Metallicus Argenti niger cum Argento puro capillari & minutis candidis crystallis. Fribergæ in Saxonia.* Schwarz Silber Ertz mit durchwachsenen gedigen Haar Silber und gar kleinen Quartzn Crystallen, i. e. Black Silver-Ore, with pure, thorough-grown capillary Silver, and very small Quartz of sparry Crystals. M. de Schonberg. The Mines of Freyberg and Fohn-Georgenstadt are the richest in Silver of any in Germany. This holds about  $\frac{1}{2}$  Silver with Sulphur.

p. 9. *Argenti puri massula Quarzo innata. Ex Saxonia.* Dr. Scheuchzer.

p. 10. *Argentum purum repertum in venis. Gedigen-Silber Agricola, Quarzo, i. e. Fluore mistum, ex fodinis de Fohn-Georgenstadt.* Dr. Scheuchzer.

p. 11. *Argentum purum capillare Agricola.* Dr. Scheuchzer.

p. 12. *Argentum nativum super Silicem, prope Fribergam in Saxonia.* Gewachsen Silber auf strahllichten Quartz, i. e. Silver-grown upon radiated Quartz, a sort of Spar. M. de Schonberg.

p. 13. *Vena argenti dives ferrugineæ coloris, e qua scintillæ Argenti purissimæ emicant. Fohn-Georgenstadt in Saxonia, sub titulo, Hornertz.* Dr. Scheuchzer. Conferatur Minera Argenti cinerea Norwegica, fertilis satis, quæ quadam sui parte luteo tingitur colore, & ferme ferrugineo, in qua Argentum ipsum minutissimis granulis è minera emicat. Wormij Musæum, p. 118.

p. 14. *Argentum purum fossile in vena rubra, prope Johann-Georgenstadt in Saxonia.* Gedigen Silber in rothen Gebürge, i. e. Native,



Native, Virgin, or pure Silver, in a red Vein-stone. *M. de Schonberg.*

p. 15. *Bracteola argenti adherentes fissili rubro.* *Johan-Georgenstadt in Saxonia.* Blättgen Silber uff rothen Scheiter, *i. e.* Flakey or foliated Silver upon red Silver. *M. de Schonberg.*

p. 15<sup>x</sup>. *Argentum foliatum in lapide Scissili rubro.* *A. Rothenkneis Saxonia.* Dr. Henckell.

p. 16. *Lapis argentarius niger in marmore metallico rubro, cui inhaerent bracteola argenti nativi.* *Fribergæ in Saxonia.* Schwarz Silbern Ertz in rothen Spad mit gedigenen angeflodenen Silber, *i. e.* Black-Silver-Ore, in red Spaad, with pure native Silver adhering to it, or intermingled with it. *M. de Schonberg.*

p. 17. *Lapis argentarius cornuus viridis & purpureus cum bracteolis argenti puri.* *Johan-Georgenstadt in Saxonia.* Reich gräulich und braun horn Ertz mit angeflodenen gedigen Silber, *i. e.* Rich, greyish, and brown Horney-Ore, with pure, native Silver adhering to it, or intermingled with it. *M. de Schonberg.*

p. 18. *Silex fuscus cui adhaeret color caruleus cum minutis bracteolis argenti rudis.* *Fribergæ in Saxonia.* Blauer Feuernstein mit einer blauen Druse, daranf gedigen Blättgen Silber leigt, *i. e.* Blue Firestone, with a blue Dross or Efflorescence, upon which there lies pure, native, foliaceous Silver. *M. de Schonberg.*

p. 19. *Argentum rubrum pellucidum in vena argenti nigra.* *Ehrenfreiderdorff in Saxonia.* Rothgültig Ertz so durchsichtig in einer Silberhaltigen reichen Schwärze, *i. e.* Red-goldish-Ore, transparent, in a Silver holding rich Schwarzze, *i. e.* Blackness. *M. de Schonberg.* [Found in Veins in great Quantity about 200 Fathom deep. It holds about  $\frac{1}{4}$  Silver; the very Grannates in it hold Silver. The red Colour is owing to the Sulphur and Arsenick].

p. 19<sup>x</sup>. *Minera Argenti ditissima, quippe continens Argenti  $\frac{3}{4}$  x.* in *Hb. Minera.* *Ex Andrea Fodina Neutang, in montibus Hercynia.* Rothgulden-Ertz. Dr. Hugo.

p. 19<sup>\*</sup>. *Minera Argenti ditissima, Clausthalensis. Ex Crypta Neutang dicta.* Continet ultra Dimidium Argenti. Dr. Hugo.

p. 20. *Argentum rude rubrum.* Rotgolden Ertz *Agricola.* *Quod plumbi ad instar obtegit illud, est Argentum rude nigrum.* Gedigen-schwarz-silber Ertz ejusdem, alias Glas-Ertz, ex fodinis Saxonice de *Johan-Georgenstadt.* Dr. Scheuchzer.

p. 21. *Minera Argenti ex fodinis Altsölenfis in Hungaria.* Rotgulden-Ertz. Dr. Leopold. There is Spar and Marcasite with it.

p. 22. *Argentum rude rubrum parietibus suis affixum.* Roht Gulden-Ertz in Sohlbanderen de *Georgiopolis Saxonice.* Dr. Scheuchzer.

p. 23. *Rot-gulden-Ertz.* *Johan-Georgenstadt in Saxonia.* The black Parts hold Silver, perhaps  $\frac{1}{2}$ . The red are partly sulphureous, and partly arsenical. *M. Valkenier.*

p. 24. *Argentum rubrum purum.* *Johan-Georgenstadt in Saxonia.* Rot-gulden-Ertz, *i. e.* Red-goldish-Ore. *M. de Schonberg.* [It yields about  $\frac{1}{4}$  and sometimes  $\frac{1}{3}$  of Silver. Only Spar and Sulphur,



phur, no Lead. 'Tis found in great Quantity in Fissures perpendicular 200 Fathom deep. 'Tis the Sulphur and Arsenick that give it the red Colour. Mr. Weber].

p. 25. *Argentum rubrum in Cadmia metallica. Fribergæ in Saxonia.* Rothgultig Ertz in Ertzkobold, i. e. Red-goldish-Ore in Cobalt-Ore. M. de Schonberg.

p. 26. *Argentum rubrum in plumbagine. Fribergæ in Saxonia.* Rothgultig-Ertz in Bleyglantz, i. e. Red-goldish-Ore in Lead-Glitter. M. de Schonberg.

p. 27. *Argentum rubrum in lapide arario & plumbario. Fribergæ in Saxonia.* Rothgultig Ertz mit Kupffer Ertz und Bleyglantz, i. e. Red-goldish-Ore, with Copper-Ore, and Lead-Glitter. M. de Schonberg.

p. 28. *Argentum rubrum super plumbaginem in marmore metallico albo, Fribergæ in Saxonia.* Rothgultig-Ertz uff Bleyglantz in weissen Spad, i. e. Red-goldish-Ore upon Lead-Glitter, in white Spaad. M. de Schonberg.

p. 29. *Argentum rubrum in vena cinerea. Fribergæ in Saxonia.* Rothgultig-Ertz in grauen geburge, i. e. Red-goldish-Ore in a grey Veinstone. M. de Schonberg.

p. 30. *Argentum rubrum in sterili nitido cinereo. Fribergæ in Saxonia.* Rothgultig-Ertz in grauen geneiss, i. e. Red-goldish-Ore in grey Geneiss. M. de Schonberg.

p. 31. *Argentum rubrum in terra argentaria lutea. Fribergæ.* Rothgultig-Ertz in einer Gilbe, i. e. Red-Goldish-Ore in a yellow Veinstone. M. de Schonberg.

p. 32. *Excrecentia Crystallorum ex marmore metallico rubro cui insidet globulus argenti rubri. Fribergæ.* Quarzn Gewachse auff rothen Spad darinnen eine Knospen rothgultig Ertz, i. e. Quartz, a sort of Spar vegetating, or growing upon a red Spaad, wherein there is a Bud, or Germ of red-goldish Ore. M. de Schonberg.

p. 33. *Argentum albicans & rubrum super marmore subluteum. Fribergæ.* Weiss und Rothgultig Ertz auff gülblichten Spad, i. e. White and red-goldish Ore upon yellowish Spaad. M. de Schonberg.

p. 34. *Argentum rude rubrum mixtum cum Marcasita, Schemnicensæ Hungaricum. Dr. Leopold.*

p. 35. *Minera Argenti purissima, ex fodinis Schemnicensibus in Hungaria. Dr. Leopold.* There is Spar and Marcasite with it.

p. 36. *Minera Argenti ex Palatinatu superiori. Dr. Leopold.* This is pretty rich in Silver. There is also of this sort of Ore got at Schemnitz.

p. 37. *Argentum nigrum in marmore rutilo & Crystallis minutis, quibus adhaeret Cadmia sulphurea. Fribergæ in Saxonia.* Schwarz Silber Ertz in rothlichen Spad und weissen Quartzdrusen mit eingesprenagten Ertz Kobold, i. e. Black Silver-Ore in reddish Spaad, and white Quartzdrusen, with Cobalt-Ore interspers'd. M. de Schonberg.

p. 38. *Argentum rude nigrum Schemnicensæ Hungaricum. Dr. Leopold.* It yields about  $\frac{1}{4}$  Silver.

p. 39. *Argentum rude nigrum*. Gediegen Schwartz-Silber-Ertz. Agricolaë Sahlbergium. Dr. Scheuchzer.

p. 40. *Argentum nigrum in marmore metallico lutei coloris*. Fribergæ in Saxonia. Schwartz-Silber-Ertz in gilblichten Spad, i. e. Black Silver-Ore in yellowish Spaad. M. de Schonberg.

p. 41. *Argentum nigrum in Silici candido*. Fribergæ. Quartz Silber-Ertz in weissen Quartz, i. e. Black Silver-Ore in white Quartz, a sort of Spar. M. de Schonberg.

p. 42. *Argentum nigrum dives*. Fribergæ in Saxonia. Reich Schwartz Silber Ertz, i. e. Rich black Silver-Ore. M. de Schonberg.

p. 43. *Argentum nigrum in marmore albo metallico*. Fribergæ. Schwartz Silber Ertz in weissen Spad, i. e. Black Silver-Ore in white Spaad. M. de Schonberg.

p. 44. *Argentum nigrum in marmore metallico tessellato*. Fribergæ in Saxonia. Schwartz Silber Ertz in spigel Spad, i. e. Black Silver-Ore in Looking-Glass Spaad. M. de Schonberg.

p. 45. *Argentum nigrum mollissimum in marmore metallico rubri coloris*. Fribergæ. Schwartz Federn-Ertz in Rothlichten Spad, i. e. Black Plumose-Ore in reddish Spaad. M. de Schonberg.

p. 46. *Argentum nigrum spongiosum. continet in se sexaginta Marcas argenti (i. e. 30 per Cent.)* Fribergæ. Schwartz durchwittert reich Silber Ertz in weissen Spad, so sechzig Marck Silber hält, i. e. Black, spongy, rich, Silver-Ore, in white Spaad, which holds 60 Merks in Silver. M. de Schonberg.

p. 47. *Argentum fuscum*. Fribergæ in Saxonia. Fahl Silber Ertz, i. e. Pale-brown Silver-Ore. M. de Schonberg.

p. 48. *Argentum albicans in plumbagine*. Fribergæ. Reich Weißgültig-Ertz in Bleyglantz, i. e. Rich white goldish-Ore in Lead-Glitter. M. de Schonberg.

p. 49. *Argentum albicans in Pyrite cavernoso cum plumbagine*. Fribergæ. Reich weißgültig Silber Ertz in durchsichtigen kies und Bleyglantz, i. e. Rich, white, goldish, Silver-Ore, in transparent Marcasite and Lead-Glitter. M. de Schonberg.

p. 50. *Argentum albicans & plumbago cum marmore metallico rutilo super venam subviridem*. Fribergæ in Saxonia. Weißgültig Ertz und Bleyglantz mit durchwachienen rothlichten Spad uff grünlichten Geburge, i. e. White Goldish-Ore, and Lead-Glitter, with thorough-grown reddish Spaad upon greenish Veinstone. M. de Schonberg.

p. 51. *Argentum albicans & nigrum plumbagine mixtum in sterili nitido*. Fribergæ. Weiß und Schwartz Silber Ertz mit Glantz in den weißglimmrichten Geburge, i. e. White and black Silver-Ore, with Glitter, in a white glittering Vein. M. de Schonberg.

p. 52. *Argentum albicans in Lapide plumbario*. Fribergæ in Saxonia. Weißgültig Ertz mit etwas Bleyglantz, i. e. White Goldish-Ore, with something of Lead-Glitter. M. de Schonberg.

p. 53. *Argentum rude plumbej coloris*. Glafs-Ertz. Ex Georgipoli Saxonia. Argenti rudi nigro innatum. Dr. Scheuchzer.

p. 54. *Argentum rude plumbej coloris.* Glafs-Ertz Agricolaë. Ex *Jedinis Hungaria.* Dr. Scheuchzer.

p. 55. *Argentum rude plumbei coloris, Fribergæ.* Glafs-Ertz. [It yields of Silver, one with another, near an Ounce and a half per Pound. It has Lead in it. There is great Quantity of it 400 Fathom deep. Mr. Weber.] M. de Schonberg.

p. 56. *Argentum rude ex Hungaria,* Glafs-Ertz. M. de Schonberg. [Tis rich and found in Quantity in Veins at *Schemnitz.* Mr. Weber.] The Glafs-Ertz is always very rich in Silver. The Characteristick of it is, that it cuts with a Knife like melted Lead. That on the Top is the Glafs-Ertz; the rest is Bleyglantz, or common Lead-Ore.

p. 57. *Argentum rude plumbej coloris, quod cultello scindi potest.* John-Georgenstadt. Derb Glässin-Ertz, i. e. Glassy-Ore, tough, or tenaceous, not friable. M. de Schonberg.

p. 58. *Argentum rude plumbej coloris in lapide argentario rubro.* John-Georgenstadt in Saxonia. Glafs und rothgultig Ertz, i. e. Glassy and red-goldish-Ore, by Gultig they imply only rich. This holds about half Silver. M. de Schonberg.

p. 59. *Argentum rude plumbei coloris in marmore metallico rubro.* Fribergæ in Saxonia. Angeflogen Glässin Ertz uff rothlichten Spad, i. e. Interspers'd glassy-Ore upon reddish Spaad. M. de Schonberg.

p. 60. *Argentum rude cineraceum in marmore candido metallico.* Spaat. Ex *Vena Sancti Michaelis, quæ est Saalsfeldij in Thuringia.* Dr. Leopold. The Ore in this is of Zink, holding some Silver.

p. 61. *Argentum rude cineraceum.* Gedigen graun Silber Ertz Agricolaë. Fribergæ in Saxonia. Dr. Scheuchzer.

p. 62. *Argentum rubrum in Silice candido.* Fribergæ. Rothgültig Ertz in weissen Quartz, i. e. Red goldish-Ore in white Quartz, a Sort of Spar. M. de Schonberg.

p. 63. *Argentum albicans in mica.* Fribergæ in Saxonia. Weisgültig Ertz in Glimmrichten Geburge, i. e. White Goldish-Ore in a glittering Vein-stone. M. de Schonberg.

p. 64. Silver-Ore out of the Silver-Mine of *Schemnitz* in Hungary. Dr. Edward Brown.

p. 65. Silver-Ore from the famous Mines of *Clausthall* in Hanover. The Ore here yields Silver, Lead, and Copper. Five Parts in Eight of the Revenue of these Works belong to the Elector: and bring him in yearly about 30000 l. Sterling. This is a Sample of the Sort of Ore that yields the most Silver. This, which is the deepest of these Mines, is betwixt 700 and 800 Feet in Perpendicular. This may hold about  $\frac{1}{15}$  of Silver. M. Belchoir.

p. 66. *Argenti Vena in marmore candido Cryfocolla ex caruleo perfusa.* Ex *Sessamina valle* (Schanis) Rhetia. Dr. Scheuchzer.

p. 67. *Argentum rude Suacense venâ Malachitica mixtum.* Dr. Scheuchzer.

p. 68. *Lapis fissilis cum Argento & Cupro caruleo. Schwarzb-  
berga in Saxonia.* Silber und Kupferhaltigen Scheiffer, *i. e.* A  
Shiver holding Silver and Copper. *M. de Schonberg.*

p. 69. *Argentum albicans in Cadmia metallica sulphurea, Ma-  
riebergæ in Saxonia.* Weißgültig Ertz in Ertz Kobold, *i. e.* White  
Goldish-Ore, in Cobalt-Ore. *M. de Schonberg.*

p. 70. *Cadmia fossilis argenti ferax in Vena cineracea & alba.  
Fribergæ.* Kobaldiges Silber Ertz mit blewde in grau und weißen  
Gebürge, *i. e.* Cobaltish Silver-Ore with Blende, in grey and white  
Veinstone. *M. de Schonberg.*

p. 71. *Cadmia fossilis argenti ferax. Fribergæ in Saxonia.* Der-  
ber Silberhaltiger Ertz Kobold, *i. e.* Tough Silver-holding Co-  
balt-Ore. *M. de Schonberg.* [It differs little from our Vitriolick  
Pyrites in Appearance: and it shoots like it.] [This Sample dis-  
solv'd after the manner of the Pyrites.]

p. 72. *Vena Argenti cum Caruleo & Cryscolla. Ex Rhatia.  
Dr. Scheuchzer.*

p. 73. *Minera Argenti nigricans, ex fod. Freyburgo-Misnicens.  
Dr. Leopold.*

p. 74. *Vena Argenti ex fodina Trium Regum sanctorum Schem-  
nizensi, in Hungaria. Dr. Leopold.*

p. 75. *Vena Luna pura. Glass-Ertz dicta, ex fod. Regij Princi-  
pis Freybergenfi Misnica. Dr. Leopold.*

p. 76. *Minera Luna ex fodina Fortuna Recentis, ad oppidum Jo-  
hannis Georgij, ad confinia Bohemia. Dr. Leopold.*

p. 77. *Minera Luna ex fodina St. Andrea in Hercynijs. Dr. Leo-  
pold.*

p. 78. *Vena Argenti, Cupri, & Pyritæ, in Farrera Alpe Nussæra,  
Rhatia. Dr. Scheuchzer.*

p. 79. *Vena Luna dives, intermicante pyrite distincta, ex fod.  
Sahlbergenfi in Suecia. Dr. Leopold.*

p. 80. *Minera Argenti ex fodina Hellefarsjen, in Suecia. Mr.  
John Angerstein.*

#### Plumbi Mineræ, Lead-Ores.

σ. 1. *Plumbago super Pyritem aureo colore. Fribergæ in Saxonia.*  
*ni.* Silb.rhaltiger Bleyschweiff uff Kupffer Kies, *i. e.* A Silver-  
holding Lead-Verge upon a Copper Marcasite. *M. de Schonberg.*  
[This is the very finest grain'd Steel-Ore. It may hold about  $\frac{3}{4}$   
Lead, but is of very hard Fusion].

σ. 2. *Steel-grain'd Lead-Ore, holding Silver. Minera Argenti  
ex fodinis Anhaltinis. Dr. Leopold.*

σ. 3. *Vena Argenti & Plumbi necnon Cupri fecunda. Fribergæ  
in Saxonia.* Kleinsprischlichter Bley, *i. e.* Small-grain'd Lead.  
*M. de Schonberg.* [100 lb of this commonly yields about 30 lb  
of Lead and 12 Ounces of Silver. It lies about 300 Fathom  
deep, in a Vein, in great Quantity. *Mr. Weber.*]

σ. 4. *Vena plumbi; effoditur prope Davasium in Rhatia. Dr  
Scheuchzer.*

σ. 5. *Minera plumbi cum Fluore albo, ex Sylva Sessana. Dr.  
Kisner,*



σ. 6. Lead-Ore, lying in Sparks or Grains amongst white Spar, with a small Admixture of a yellow shining Marcasite. It hardly holds  $\frac{1}{2}$  Lead. From a Mine in Sweden.

σ. 7. *Plumbago in Talco cinereo. Sneberga in Saxonia.* Bleyglantz in grauen Talc, i. e. Lead-Glitter in grey Talc. M. de Schonberg.

σ. 8. *Plumbago cum are feracissima. Friberga in Saxonia.* Bleyglantz mit Kupffer Ertz, i. e. Lead-Glitter with Copper-Ore. M. de Schonberg.

σ. 9. *Flos aris in Galena argenti nigra. Friberga in Saxonia.* Kupfferblumen in schwarzen Silber blende, i. e. Copper Flowers in black Silver Blende. M. de Schonberg. [*Galena* or *Blende*, holds a little Lead; which is apt to run into a Siag.]

σ. 10. *Minera plumbi ex fodinis Fallunensibus in Suecia.* Dr. Leopold.

σ. 11. Sparkling Lead-Ore, the Sparks small: very poor and stony. From *Clausthall, Hannover.*

σ. 12. A stony Lead-Ore of a dark grey Colour; the Lead lying in Sparks with an Admixture of Sulphur. It may hold about  $\frac{1}{4}$  Lead. From Sweden.

σ. 13. *Minera plumbi ex Sylva Hercynia.* Dr. Kiser.

σ. 14. *Vena plumbi, cupri, & argenti, effoditur in Rhetia supra Zillis in Monte Despin.* Dr. Scheuchzer.

σ. 15. *Fibra plumbaginis in marmore metallico albo. Friberga in Saxonia.* Eine durch weissen Spad setzende Bleyglantz Klufft, i. e. Lead-Glitter fix'd upon a thorough-white Spad Klufft. M. de Schonberg.

σ. 16. *Minera Argenti Goslarensis.* Brought thence by M. Ol. du Mont.

σ. 17. Lead-Ore, with white Spar. This Ore, when freed from the Spar, yields upon Trial, 61 lb in 100 of Lead, and 6 Drachms of Silver. From *New-England.* Mr. Bridger.

σ. 18. Lead-Ore, with a Spar, from *Clausthall, Hannover.* Mr. Belchoir. These Lead-Mines are very considerable.

σ. 19. Sparkling Lead-Ore, the Sparks large, with white Spar incorporated with it: as also a sort of Veinstone, of a grey Colour, and fine Constitution. *Clausthall, Hannover.*

σ. 20. Cross-grain'd Lead-Ore with Spar, white and semipellucid, crystalliz'd upon it. *Clausthall, Hannover.*

σ. 21. Sparkling Lead-Ore, the Sparks large; vein'd with white Spar, and a yellow brassy Marcasite. *Clausthall, Hannover.*

σ. 22. *Plumbago cum Pyrite. Friberga in Saxonia.* Bley und Kupffer Ertz, i. e. Lead and Copper-Ore. M. de Schonberg. [It may hold  $\frac{1}{2}$  Lead.]

σ. 23. *Plumbago cum lapide sulphureoso. Friberga.* Bleyglantz mit Schwefelkies, i. e. Lead-Glitter, with a sulphureous Marcasite. M. de Schonberg.

σ. 24. *Minera plumbi ad pagum Kleeberg, prope Urbem Butzbacum.* Dr. Kiser.



σ. 25. *Galena plumbifera, ex vena Gratia Dej Claussthalensfs five Vallis Nicolaitana, in Hercynijs Luneburgicis.* Dr. Leopold.

σ. 26. Lead-Ore. From *Swartzburg*. There is a little Calamine incorporated with it.

σ. 27. A Piece of Lead-Ore, flakey, glossy and shining, with some small Proportion of Sulphur or Marcasite. It seems to hold about  $\frac{1}{2}$  Lead. \*From *Sweden*.

σ. 28. *Lapillus niger plumbi candidi. Marienburga in Saxonia.* Zinne Graune. M. de *Schonberg*.

σ. 29. Lead-Ore, holding Antimony, sent by the Name of *Neelangenium*, from *Fort St. George*. Mr. *Bulkley*.

σ. 30. *Minera plumbi ex fodinis Rhodensibus Hassia.* Dr. *Leopold*. There is white Spar intermingled with it: and a little Marcasite.

σ. 31. Silber Ertz. *Igla Moravia.* M. *Ol du Mont*. [Tis a cross-grain'd Lead-Ore, with Tubera upon it like those of the *Hamatites*, along with it. It does not appear to hold much Silver].

σ. 32. *Galena, plumbi vena dives.* Bley-*Glantz.* Dr. *Scheuchzer*.

σ. 33. Lead-Ore, sent by Dr. *Kisner*, with the Inscription, *Minera Argenti ex Suecia*. [It appears to hold very little Silver: but is rich in Lead. This Ore is whiter and more glossy than usual].

σ. 34. Lead-Ore, of a fine Violet Colour; found, but rarely, in the Mines of *Schwartzenburg* in *Saxony*. Mr. *Melmoth*, who says that there's a considerable Quantity of common Potters-Ore got in these Mines. The Potters-Ore at *St. Issy* in *Cornwall*, being expos'd for some time on the Surface to the Air, attains a violaceous Cast. This Colour is probably owing to an Admixture of Sulphur: and Marcasites that abound in that Mineral, have frequently a glossy red, purple, or violet Cast; particularly those from *Devonshire* and *Cornwall*. (See the *Catalogue of the English Fossils*. 1. 10. 11. 50. 51. 52.)

σ. 35. *Vena argenti & plumbi fecunda.* *Friberg* in *Saxonia*. Silberhaltiger kleinspissigter Bleyglantz, i.e. Silver holding small pointed Lead-Glitter.

σ. 36. Broad-grain'd Lead-Ore with Marcasite, and Spar, adhering to it, from *Freyburg* in *Saxony*.

σ. 37. Lead-Ore, the finest and cleanest I ever saw: and carrying somewhat of a Gloss and Resemblance of Silver. From the Mines at *Claussthal*, *Hannover*.

σ. 38. A Mass of Lead-Ore, having amongst it a grey Spar, and a small Proportion of a yellow shining Marcasite. The Ore is of that Sort call'd the *Blue-Ore*: and breaks into small Squares. From the great Mine near *Widtfabla* in *Sweden*. It seems to hold about  $\frac{1}{3}$  Lead. Some Part of the Lead of these Mines, which are the only considerable Lead-Mines of that Country, yields Sil-

ver, but in so small a Proportion, that 'tis hardly worth working. Mr. Lathalier.

σ. 39. *Plumbago tessellata*. Fribergæ in Saxonia. Wurfflicht Glantz-Ertz, i.e. Diced Glitter-Ore. M. de Schonberg.

σ. 40. A Nodule of Lead from a Mine at - - - - - in Hungary. M. Ol. du Mont. He had several other like Nodules from the same Mine.

σ. 41. White Lead-Ore. Clausthall, Hannover.

σ. 42. *Lapis plumbarius fluoribus candidis similis*. Fribergæ in Saxonia. Weisbley Ertz, i.e. White Lead-Ore. M. de Schonberg. [It is found dispersedly among the other common Lead-Ore in the Veins, in small Quantity. It yields about  $\frac{1}{2}$  Lead. Mr. Weber].

σ. 43. *Lapis plumbarius luteus & viridis*. Fribergæ in Saxonia. Gelbe und grün Bleyn Ertz, i.e. Yellow and green Lead-Ore. M. de Schonberg. [The Green is owing to Calamine. It holds about  $\frac{1}{2}$  Lead].

σ. 44. *Lapis plumbarius niger*. Fribergæ in Saxonia. Schwartz Bleyn Ertz, i.e. Black Lead-Ore. M. de Schonberg.

#### Mineræ Stanni, Tin-Ores.

1. 1. A Tin-Grain very large, brought from Mispnia, by M. Ol. du Mont. This is shot in the ordinary Form of Crystal, an hexagonal Pyramid, rais'd on an hexagonal Column or Base. The Tin-Grains of Cornwall are in quadrangular Pyramids: as there appears to be one in that 1. 9. *infra*, from Marienberg.

1. 2. *Lapillus niger plumbi candidi ferax*. Eibenstock in Saxonia. Schwartz Zihngraune, i.e. Black Tin-Grains. M. de Schonberg. [This holds half Tin. It lies in Veins amongst the Ore. Mr. Weber].

1. 3. *Lapillus niger plumbi candidi ferax in lapide cinereo*. Eibenstock in Saxonia. Zihngraune in grauen Kalkgebürge, i.e. Tin-Grains with a Grey Caukey Vein-stone. M. de Schonberg.

1. 4. *Lapillus niger plumbi candidi*. Ehrenfreiderdorff Saxonia. Zinnegraune, i.e. Tin-Grains. M. de Schonberg.

1. 5. Tin-Grains brought from Mispnia, by M. Ol. du Mont.

1. 6. Tin-Grains. From Schlackenwerdt in Bohemia.

1. 7. *Lapillus niger plumbi candidi*. Marienbergæ in Saxonia. Zinnegraune, i.e. Tin-Grains. M. de Schonberg. [This is the richest Tin-Mine in Saxony. Mr. Weber].

1. 8. *Lapis niger ex quo præparatur Stannum* Snebergæ in Saxonia. Schwarzer Zwitter, i.e. Black Tin-Ore. M. de Schonberg.

1. 9. *Lapilli nigri plumbi candidi feraces in silice albo*. Marienbergæ. Zihngrauen in weißen Quartz, i.e. Tin-Grains in a white Quartz, a sort of Spar. M. de Schonberg.

1. 10. *Lapilli nigri plumbi candidi feraces in terra lutea*. Marienbergæ in Saxonia. Zihngrauen in gelbem Gebürge, i.e. Tin-Grains in a yellow Vein-stone. M. de Schonberg.

7.11. *Lapis niger ex quo conflatur Stannum.* John-Georgenstadt in Saxonia. Schwarz Zwitter, i. e. Black Tin-Ore. M. de Schonberg.

7.12. *Stannum in Medulla Saxi.* Marienberg. Zwitter in weißen Steinmarck, i. e. Tin-Ore upon white Stone-Marrow. M. de Schonberg.

7.13. *Lapillus niger ex quo preparatur Stannum.* Marienberg in Saxonia. Schwarzer Zwitter, i. e. Black Tin-Ore. M. de Schonberg.

7.14. *Lapis viridis cum lapillis nigris stanni feracibus.* Marienberg. Grünlichter Zwitter mit kleinen Zihngraunen, i. e. Greenish Tin-Ore, with small Tin-Grains. M. de Schonberg.

7.15. *Stannum in arenoso lapide.* John-Georgenstadt, Saxonia. Zwitter in weißen Sandgebürge, i. e. Tin-Ore in a white Sandy Vein-stone. M. de Schonberg.

7.16. *Stannum cum Galena sterili viridi.* Marienberg in Saxonia. Grün blendichter Zwitter, i. e. Green barren Tin-Ore. M. de Schonberg.

7.17. The common Tin-Ore from Aw, Saxony. Mr. Melmoth. [We have a like Sort in Cornwall, holding some small Quantity of Tin, and a very little Iron].

7.18. Tin-Ore, grey, of the common Sort from Schlackenwerdt in Bohemia; where there are about 60 Grooves, and greater Quantities of this Metal got than in any other Part of Germany. This is pretty like one Sort of Cornish-Ore that yields  $\frac{1}{5}$  Part of Tin.

#### Mineræ Cupri, Copper-Ores.

v.1. Native Copper; found, but very rarely, in the Lead-Mines of Freyberg, in Saxony: sometimes in this blanch'd Form, sometimes in Flakes, and Plates, fine and malleable. Mr. Melmoth. There is a considerable Quantity of a yellow Marcasite Copper-Ore in these Mines.

v.2. *Æs nativum è fodinis Hercynia.* Gewachsen Kupffer, i. e. Grown Copper. From the Haartz Mountains. M. de Schonberg.

v.3. *Æs purum fossile,* Gediegen Kupffer, Agricola; *ex Ducatu Wirtembergensi.* Dr. Scheuchzer.

v.4. *Cuprum nativum in modum Argenti capillaris.* Speneri Musæi, p. 173. Dr. Scheuchzer.

v.5. *Cuprum purum nativum è Ditionibus Principum & Comitum Schwartzbergenstium.* Gewachsen Kupffer, i. e. Grown Copper. M. de Schonberg.

v.6. *Æs nativum fossile in lapide cinereo.* Saeberg in Saxonia. Gewachsen Kupffer in grauen Geburge, i. e. Grown Copper in grey Vein-stone. M. de Schonberg.

v.7. *Æs nativum fossile in lapide arenoso albo.* Saeberg in Saxonia. Gewachsen Kupffer in weißen Sandstein, i. e. Grown-Copper in white Sand-stone. M. de Schonberg.

u. 8. A Vein of native Copper in a red Stone, from the Copper Mines of Goslar in Germany. Mr. Belchoir.

u. 9. A Marcasite, with Spar and Grit. Sent by Dr. Leopold, with the Inscription, *Minera Cupri Clausthalensis sylva Hercynia*. There are some very small Spangles of native Copper in it.

u. 10. A grey stony Stone, with a Mass of brown Spar affixt, with Veins of blue and green in it. Sent by Dr. Leopold, with the Inscription, *Minera Cupri ex fodinis Heinebergensibus Comitatus Nassoviensis*.

u. 11. Nago Potshawe; from the East-Indies. Mr. Bulkley. They calcine it, and afterwards use it inwardly in scirrhus Tumours of the Spleen and Belly; also in hard Swellings of the Testicles. 'Tis a hard stony Earth, holding Copper: and ting'd with Green and Blue.

u. 12. *Minera Cupri viridis cum caruleo. Ex fodinis Hasso-Darmstadiensibus*. Dr. Kifner. They call this Blue Berg-blaw, or Mine-Blue.

u. 13. *Vena aris viridis & rutila qua in se continet sexaginta per centum libras Cupri. Sneberga in Saxonia*. Reiche Kupfergrüne und rothe, i. e. Rich Copper Green, and rich Copper Red. M. de Schonberg. [It has Virgin Copper in it: and yields above  $\frac{1}{2}$  Copper].

u. 14. *Lapis fissilis arenosus cum caruleis granis. Sangerhusia in Saxonia*. Sandichter Kupfer Schiefer mit blauen Kornern, i. e. Sandy Copper Shiver with blue Kernels. M. de Schonberg.

u. 15. *Lapis fissilis, qui are est dives in caruleo nigricans. Isebie in Saxonia*. Schwartz blauer Kupfer Schiefer, i. e. Blackish blue Copper Shiver. M. de Schonberg.

u. 16. *Minera Cupri. Schwartzburg in Germania*. Kupfer Ertz. M. de Schonberg.

u. 17. A white Spar, with Veins of Brown, a very bright Blue, and a few Spots of Green, pretty ponderous, and doubtless impregnated with Copper, sent by Dr. Scheuchzer, with the Inscription, *Caruleum fossile, Bergiasur, & Chrysocolle, Berg-grun Agricolæ, Bulacensis*. [Berg-Lasur is Mine-Blue, Berg-grün is Mine-Green.]

u. 18. *Caruleum nativum*. Dr. Scheuchzer.

u. 19. *Chrysocolle nativa. Annaberga in Saxonia*. Kupfergrün, i. e. Copper-Green. M. de Schonberg. [This is Copper-Ore, and may yield  $\frac{1}{4}$  of that Metal.]

u. 20. A Marcasite, with Spar, and Grit; sent by Dr. Leopold, with the Inscription, *Minera Cupri ex fodinis Fallumensibus in Suecia*. This holds but little Copper.

u. 21. Copper-Ore, green, and very rich. From----- in Germany. M. Valkenier.

u. 22. A Stone, gritty, with a Cast of Green, and shining Sparks throughout. This is the common Copper-Ore of Aw, in Saxony, about 5 Miles from Schwartzenberg. 'Tis got in great Quantity, and some of it is pretty rich; tho' this seemingly holds but little Copper. Mr. Melmoth.



v. 23. Copper-Ore. *Gullenbergh*, in *Bohemia*. Brought thence by *M. Ol. du Mont*.

v. 24. Spanish Copper-Ore. It may hold about  $\frac{1}{3}$  Copper. Brought by *M. Ol. du Mont*.

v. 25. *Minera Cupri prope Pagum Hummershausen, Territorij Hasso-Darmstadiensis*. *Dr. Kifner*.

v. 26. *Minera Cupri prope Pagum Hummershausen, Territorij Hasso-Darmstadiensis*. *Dr. Kifner*.

v. 27. *Minera Cupri ad Pagum Acheback, Territorij Hasso-Darmstadiensis*. *Dr. Kifner*. [By the two opposite flat Sides, and the Flakes or Veins of this Ore running parallel, 'tis apparent it was taken forth of a Fissure.]

v. 28. *Minera Cupri, prope Pagum Ellemshausen, in Comitatu Erbacensi*. *Dr. Kifner*.

v. 29. Copper-Ore, of a Rust-Colour, with bright Sparks interspers'd, and Threads of a very fine bright Green. Sent by *Dr. Leopold*, with the Inscription, *Minera Cupri, ex fodinis, Spes Metallii fossoribus dicta, in Landgraviatu Hassia*.

v. 30. *Flos aris Coloribus maxime variis. Friberga in Saxonia. Kupfferblume*; i. e. Copper-Flowers. *M. de Schonberg*.

v. 31. *Flos aris Coloribus maxime variis. Gersdorff Saxonia. Kupferblume*. *M. de Schonberg*. [There is also Virgin-Silver in it.]

v. 32. *Cupri Minera à Ditionibus Principum ac Comitum Schwartzbergensium*. *Kupffer Kies*; i. e. Copper Marcasite. *M. de Schonberg*.

v. 33. Copper-Ore, from the same Mine with the former, having part of a Rider of a duskey grey Stone in it. *M. de Schonberg*.

v. 33<sup>x</sup>. Copper-Ore, from another Vein of still the same Mine, with a Vein in it of white Spar, crystalliz'd.

v. 34. *Minera Cupri ex Comitatu Schwartzburgensi*. *Dr. Kifner*. This has Veins of a fine bright green cupreous Matter, shot into extreme fine Threads, much like those of the Ore of ----- in *Devonshire*. It has also Spar adhering to it, white, and in some Parts tinged with green.

v. 35. A Marcasite, yellow, with a glossy Grey, and Purple in some Parts, holding Copper. From the Mines of *Newsohl* in *Hungary*.

v. 36. A Marcasite, holding Copper. From *Kopperberg*, in *Sweden*.

v. 37. *Minera Cupri. Kupffer Ertz. Schwartzburg*. *M. de Schonberg*.

v. 38. *Minera Cupri. Schwartzburg*. *M. de Schonberg*.

v. 39. *Minera Cupri. Schwartzburg. Pfanenschweif Kupffer Ertz*; i. e. Peacocks-Tail Copper-Ore. *M. de Schonberg*. [It holds near  $\frac{1}{3}$  Copper. *Mr. Weber*.]

v. 40. *Minera Cupri. Schwartzburg. Gelf Kupffer Ertz*; i. e. Yellow Copper-Ore. *M. de Schonberg*. [It holds  $\frac{1}{2}$  Copper. *Mr. Weber*.]

v. 41. A Marcasite, with Spar and Grit, sent by *Dr. Leopold*, with the Inscription, *Minera Cupri ex fodinis Fallunensibus in Suecia*. This holds but little Copper.



v. 42. *Lapis metallicus ararius aurei Coloris. Friberga in Saxonia.* Gelb Kupffer Ertz; i. e. yellow Copper-Ore. *M. de Schonberg.* This may hold about  $\frac{1}{10}$  Copper.

v. 43. *Lapis metallicus ararius in Silice albo. Sneberga in Saxonia.* Kupffer Ertz in weissen Quartz; i. e. Copper-Ore in white Quartz. *M. de Schonberg.*

v. 44. White Spar, and Marcasite, holding Copper; from the Mines at *Clausthall, Hannover.* Mr. *Belchoir.*

v. 45. A Marcasite, holding Copper; from *Kopperberg* in Sweden.

v. 46. A Copper Marcasite, of a dusky Colour, with some small Admixture of Spar. It very nearly resembles some of the Marcasites of *Cumberland.* From the great Mines at ----- in Sweden. Mr. *Lathalier.* He was down in one of the Mines, where he had this given him for a Sample of the common Ore, and was told it yields from 5 to 7 in 10 of Copper. They find it from 50 to 150 Fathom deep.

v. 47. Another Sample, out of the same Mine, more yellow, shining, and sulphureous. Mr. *Lathalier.*

v. 48. A Marcasite, yellow, with a glossy Grey, and Purple in some parts, holding Copper. From the Mines of *Newsohl* in Hungary.

v. 49. *Minera Cupri Hassiaca, ad Pagum Kleeberg, prope Urbem Butzbach.* Dr. *Kisner.*

v. 50. A Marcasite, with Spar and Grit, sent by Dr. *Leopold,* with the Inscription, *Minera Cupri ex fodinis Rhodensibus in Landgraviatu Hassia.*

v. 51. A yellow brassy Marcasite, with Lead-Ore in the same Mals; the former holding Copper, the other Silver. From *Clausthall, Hannover* Mr. *Belchoir.*

v. 52. A Marcasite, yellow, with a Gloss of Purple in several Parts, and broad-grain'd Lead-Ore adhering to it. Some of this Copper-Ore is very beautifully gloss'd with a bright Blue, Green, and Purple. From the Copper-Mines at *Saalfeld* in Saxony. Mr. *Melmoth.* The Copper-Ore is all of this Marcasite Kind. 'Tis the richest of any of the common Copper-Ores in Saxony; and indeed in all Germany. What Quantity of Lead-Ore is got in this Mine, he did not enquire. They have of this sort of Copper-Ore, both in *Cornwall* and *Devonshire.*

v. 53. *Minera Cupri ex fodinis Dusenaviensibus Comitatus Nassovia.* Dr. *Leopold.* [This holds about  $\frac{1}{2}$  Copper, with very little Lead.]

v. 54. A dusky grey gritty Stone, yielding Copper and Lead; from a Mine at *Ilmenaw*, near *Erfurth*, in Saxony. Mr. *Melmoth.*

v. 55. A black, glossy, flakey, light Body; from the same Mine, yielding also Copper and Lead. Mr. *Melmoth.* [Both these appear to me to hold very little Metal.]

v. 56. *Minera Cupri arenosa, Conchitem striatum complectens, & Lapillum calculosum, ex Territorio Saxo-Isenacensi, prope Pagum Gerhausen.* Dr. *Kisner.*

υ. 57. *Minera Cupri fusca ex fodinis Hasso-Darmstadiensibus.* Dr. Kistner. ['Tis very poor.]

υ. 58. *Pyrites carulei & purpurei Coleris in marmore metallico albo. Fribergæ in Saxonia.* Braun und blaue Kupfferblumen in weißen Spad; i.e. brown and blue Copper-Flowers in white Spad. M. de Schonberg. [This may hold about  $\frac{1}{10}$  Copper.]

#### Mineræ Ferri, Iron-Ores.

Φ. 1. Native Iron; from - - - - in Saxony, being a Shoot about  $\frac{1}{4}$  of an Inch in length. Mr. Melmoth. It very readily answers the Magnet.

Φ. 2. *Ferrum nativum fossile. John-Georgen-stadt in Saxonia.* Gewachsen gedigen Eisen; i.e. grown, pure native Iron. M. de Schonberg. [This answers the Magnet very readily; and is a very great Curiosity.]

Φ. 3. A reddish, glossy Iron-Ore, appearing to be pretty rich. Sent by Dr. Leopold, with the Inscription, *Ferri repertus ad Pagum Rossberg Comitatus Weilburgici in Wetteravia.*

Φ. 4. *Minera Ferri, ex Sylva Bussingensi, ad Tres Fontes, Territorij Hasso-Darmstadiensis.* Dr. Kistner.

Φ. 5. Iron-Ore, glossy, black with a Cast of blue. Sent me by Dr. Lister, with the Inscription, *Minera Ferri communis ex fodinis Dammoragrubæ 16 Milliaribus Holmia Sueciæ distantibus.* [It appears to be very rich and fine.]

Φ. 6. Another sort, seeming to be as rich, but more shining. Sent me by Dr. Martin Lister, with the Inscription, *Minera Ferri rarior ex fodinis Sueciæ.*

Φ. 7. *Lapis ferrarius Schwarzenbergensis. Eisen-Stein; i.e. Iron-Stone.* M. de Schonberg. [This is the common Ore there. It lies in Veins, in vast Quantities, about 40 Fathom deep. The Veins in many places are a Fathom Diameter. Mr. Weber.]

Φ. 8. *Lapis ferrarius niger. Eibenstock in Saxonia. Schwarzer Eisen-stein; i.e. black Iron-stone.* M. de Schonberg.

Φ. 9. *Vena Ferri Budingensis.* Dr. Kistner.

Φ. 10. The common Ore of Iron, near Caen in Normandy. 'Tis pretty rich, and got in considerable Quantity. It seems to have a little Copper in it.

Φ. 11. Iron-Ore, *Shickskerner.* From Bohemia. 'Tis found chiefly in this Form, in small Lumps in the *Iffer-Meadow*, in great Quantities near the Mountains; out of which it is washed by Floods after Falls of Rain. 'Tis very rich; and being only powder'd, it answers the Magnet before Calcination. 'Twas imagin'd, by some German Mineralists, to hold Gold; but, upon tryal, I could obtain neither any of that Metal, nor Silver, out of it. It yielded full  $\frac{3}{4}$  of Iron.

Φ. 12. Iron-Ore, of a very dark red Colour, and very much like a sort found at *Langron*, in *Cumberland*, along with the *Hæmatites*, of which there are *Vestigia* upon this. 'Tis found very plentifully at *Schwarzenberg* in Saxony, and yields a considerable Proportion of Iron.

Φ. 13.

Φ. 13. *Minera Ferri, ad Pagum Berckhausen, Comitatus Solmenfis.* Dr. Kifner. This is of a Rust-Colour; and, on the Outside, has Efflorescencies of the Hæmatites upon it, very black and shining.

Φ. 14. Hæmatites, striated from the Surface to the Center, of a blackish red Colour; found plentifully at *Schwartzenberg* in *Saxony*. 'Tis rich in Iron. Mr. *Melmoth*. He hath Variety of these Hæmatitæ, from the same Mines, which all resemble ours of *Cumberland*.

Φ. 15, 16. Hæmatitæ, of a dusky red Colour, striated, and in all other respects resembling that of *Cumberland*. From *Mocho*. Mr. *Bulkley*.

Φ. 17. *Ferrum purum fossile. Eibenstock in Saxonia. Gewachsen Eisen; i. e.* Grown-Iron. M. de *Schonberg*. [This is an Hæmatites, which kind is also found at *Swatzberg*. It lies above the Veins. Mr. *Weber*.]

Φ. 18. *Hæmatites. Misnia. M. Ol. du Mont.*

Φ. 19. *Schystos. Snebergæ in Saxonia. Glaszkopff, i. e.* Glass-head. M. de *Schonberg*.

Φ. 20. *Hæmatites. Eibenstock in Saxonia. Blut-stein; i. e.* Blood-stone. M. de *Schonberg*.

Φ. 21. *Hæmatites, Schystos, ex Saxonia.* Dr. *Kifner*.

Φ. 22. Iron-Ore, from *Virginia*. Mr. *Dood*.

Φ. 23, 24. Nodules, of a brown Rust-Colour; found about 10 or 12 Foot deep, in *Cormandel, East-India*. They extract Iron out of them; which indeed is the only Metal this Coast affords. Mr. *Bulkley*.

Φ. 25. Another Nodule, little different; only it has Tubercles on one side. Sent by Dr. *Scheuchzer*, with the Inscription, *Vena Martis pisiformis ex Comitatu Badensi*.

Φ. 26. Small brown Nodules; sent by Dr. *Leopold*, with the Inscription, *Vena Martis pisiformis Smalandica, quam hyberno tempore ex lacu Asel vel Esel, propè Stattiloff Incole colligunt, & in Officinis ferrariis, exinde Fornaces, Tormenta & Globulos, & alia Instrumenta bellica fundunt*.

Φ. 27. Other like Nodules, lying in a very fine Clay of a light brown Colour. From the same Place.

Φ. 28. *Vena Ferri Globosa. Ex Comitatu Badensi.* Dr. *Scheuchzer*.

Φ. 29. *Cauhq Roy*, is calcined before used, and then given for the Hiccough. The Fakiers dye or stain their Clothes with it, to appear different from others. 'Tis a Nodule, ochreous, and holding Iron. From *East-India*. Mr. *Bulkley*.

Φ. 30. *Ferri Vena Lengnaviensis, ex Ditione Bernensi.* Dr. *Scheuchzer*.

## APPENDIX.

## Mineralia ferruginea, Magnes.

*Minerals related to Iron, and holding some of that Metal.*

## SECT. I. The Loadstone.

†Φ. 1. *Lapis ferrarius cum Magnete mixtus. Schwartzbergæ in Saxonia. Magnetischer Eisenstein; i.e. Load-stone, Iron-stone. M. de Schonberg.*

†Φ. 2. *Magnes Swartzenburgensis. Magnet. M. de Schonberg.*

†Φ. 3. A Loadstone, from Saxony. They sometimes find the Magnet in the Veins along with the Iron, in Saxony; and very commonly in the Upper Hungary. They smelt and run it down with the Iron-Ore. Mr. Weber.

†Φ. 4. A Loadstone; found amongst a great many more, on the Shores of the River Potoxon, in Maryland.

## MANTISSA I. Dendritæ.

*Natural Delineations of Shrubs, upon the Surfaces of various Fossils, chiefly in black, but sometimes in brown, made by Mineral Streams.*

χ. 1. Various Delineations on all sides of a grey Stone resembling Trees, Shrubs, &c. Given me by Mr. Charlton, alias Curteyn. He told me it came from beyond the Seas, but could not tell me from what Country. 'Tis pity a Gentleman so very curious after Things that were elegant and beautiful, should not have been as curious as to their Origin, their Uses, and their natural History; about which he was little solicitous. Mr. Robert Ball shew'd me lately a Body exactly like this in all respects, which he inform'd me was taken forth of the River Arno near Florence; where there are great Quantities of this Stone with these Delineations.

χ. 2. *Dendrita è Pago Sohlhofen Comitatus Pappenheimensis. Dr. Scheuchzer.*

χ. 3. *Fruticum lineamenta in Marmore albedo. Ex Lapidina Scaphusiana. Dr. Scheuchzer.*

χ. 4. *Dendrita Glacensis, ex Bohemia. Dr. Scheuchzer.* This, being split, shews how the Delineations are form'd in the Fissures betwixt the Slates.

χ. 5. *Dendrita propè Pagum Popperg Ducatus Solisbacensis. Dr. Scheuchzer.*

χ. 6. *Stigmira & Dendrita ex Comitatus Badensis ferri fodinis.*

## MANTISSA 2. Fossilia Incognita &amp; Incerta.

*Various native Fossils, of whose Nature, Origin and Constitution I have not been yet able rightly and sufficiently to inform myself.*

ψ. 1. A Stone of a reddish Complexion, and seeming to hold some small proportion of Iron. 'Tis variously intersected with Septa



Septa, composed of white Spar, after the manner of the *Lodus Helmontij*. What is observable in it, and what indeed I do not understand the Origin of, is a very remarkable reticulated Work on the Flat of one Surface of it; sent by *Agostino Scilla*, with this Inscription, *Figure risultata da Corpo esteriore di qualche parte d'Animale, in Sicilia*. He did not find this till after his Book was publish'd; so that there's no mention of it there.

ψ. 2. A Body of a sparry Constitution and a pale brown Colour approaching white; in Figure oblong, cylindrick, but something tapering. 'Tis fistulous, or hollow, but fill'd with a yellowish brown Stone, of the same sort with that in which it lies. Sent by *Agostino Scilla*, with the Inscription, *Tubero di qualche Animale, marino, ferata nel Sasso nella Cave di Messina*. This also was found after his Book was published.

ψ. 3. Various Bodies, oblong, streight, cylindrick, or rather something tapering; placed in various Postures in the same Mass: they are ponderous, of a very dusky red Colour; and indeed in that, and all other respects, they resemble Cast-Iron.

ψ. 4. *Gomuttra Selagitta*. 'Tis found on a Mount call'd *Vindy*, where Cows frequent and urine. 'Tis supposed, by the *Gentous*, to be partly produced that way; as the Name imports, which signifies a Stone made of Cows Urine. When refined, 'tis used inwardly against Gonorrhæa's, and inward Ulcers. From the *East-Indies*. Mr. *Bulkley*. (It seems to be the *Lapis Picens*.)

ψ. 5. Black Pumice. From the Island of *Tenariffe*. This sort is found frequently all over that Island; and is very like a sort of Vein-Stone found also frequently in *Cornwall* in the perpendicular Fissures over the Tin-Ore. There is a Sample of that in the *English Catalogue*, † f. 7. It also very nearly resembles some of the light spumose Cinders found near *Vesuvius*.

ψ. 6. Pumice of a pale brown Colour; found in the Caldera, or Cavity at the top of the *Pico* in the Island *Tenariffe*. 'Tis in Texture, Constitution and Matter so like a coralloid Porus, that I cannot think it to be really any thing else. The Pumice is commonly found floating in the Sea. Vid. *Phil. Transact.* N° 304. p. 2161.

ψ. 7. A Body in Constitution something resembling the precedent; but of a paler Colour, being near white. 'Tis very light, porous and friable; and has a Salt in it, which, to me, tastes very like the common marine Salt. This Salt is usually found in the Pumice. Vid. *Philos. Transf.* N° 304. p. 2161

ψ. 8. A Body, very light, porous and friable; of a light grey Colour near white. 'Tis glossy and shining like a Talc; and indeed 'tis striated length-ways after the manner of the fibrous Talc. It has a Salt in it exactly like that in the precedent.



## MANTISSA III.

Commentitia quædam, seu Exempla quorundam Errorum apud Scriptores Fossilium.

*Some Instances of Mistakes in the Writers of Fossils, relating to the Origin of Bodies.* [Conf. Mantiss. 2. §. 5, 6, 7, 8.]

ω. 1. *Lapis Spongia.* This has pass'd hitherto for a Fossil; and is commonly class'd with Stones, by the Writers of them. 'Tis light, porous, and friable. As to its Form, 'tis commonly hollow or fistulose. It has a brackish Salt Taste; is manifestly of marine Origin; and compos'd of a coarse, lax, coralline Matter. The Specimens in this Collection, and all the rest of it that I have seen, appear to have been the *Theca*, *Latibula*, or Cases of some Insect, made in the manner of those of the *Phryganium* or *Cad-worm*, or rather of the *Theca* of the *Penicilli marini*. 'Tis common to find on the Sea-shore, Insects thus involv'd in Cases compos'd of Sand, very small Bits of Shells, Sticks, or the like; as well as of coralloid Matter.

## MANTISSA IV.

Fossilium quorundam Præparationes.

*Miscellany Instances of Metallick and Mineral Bodies, that have been wrought; and that give some Light to Natural History.*

\*ω. 1. Clay, of a very pale Colour, near white; used by the Indians about Fort. St. George to mark their Faces with. Mr. Bulkley.

\*ω. 2. *Terra Sigillata*; from the Island of Crete. 'Tis of a pale Colour near white.

\*ω. 3. *Terra Sigillata Seichawer, alba.* *Hamburg*

\*ω. 4. *Terra Sigillata Silesiaca, ex pallido lutescens.* Dr. Kifner.

\*ω. 5. *Terra Sigillata Stregoniensis lutescens.* Dr. Kifner.

\*ω. 6. *Terra Sigillata Seichawer, rufa.* Dr. Kifner.

\*ω. 7. *Terra Sigillata Laubacensis rufa.* Dr. Kifner.

\*ω. 8. *Terra Sigillata Laubacensis, ex rufo pallidior.* Dr. Kifner.

\*ω. 9. The true *Venetian Bole*. 'Tis of a Brick-Colour.

\*ω. 10. Goslar Vitriol, dissolved and crystallized. 'Tis very prettily shot into small Squares, generally of a rhomboid Figure. They are of a green Colour; and semipellucid.

\*ω. 11. Roch-Allum. From *Turkey*.

\*ω. 12. *Alumen Rupeum. Ex Agro Romano.* The Texture, and Manner of its Crystallization, is very observable.

\*ω. 13. Vermillion, from *China*. The Merchants send it to *Nuremberg*, where it is prepared and fitted for the Use of Painters. Indeed reduced, as it is, to a fine Powder, it gives a good Colour. It is a factitious Cinnabar.

\*ω. 14. Vermillion, made in *China*; consisting of  $\frac{3}{4}$  Sulphur, and  $\frac{2}{4}$  Mercury. 'Tis fibrous; and striated a-crofs, like some of

the *Chinese* native Cinnabar; and our *Hæmatites*. The Surface of Outside of it also resembles that of the *Hæmatites*. Mr. *Cuningham*, Surgeon.

\* w. 15. Factitious red Arsenick; sent by M. de *Schonberg*, with the Inscription, *Sandaraca Baxerfeldensis. Rauschgelb*.

\* w. 16. *Cadmia Metallica, preparati Colores. Specierum diversarum*. *Blaue farbe*, i. e. blue Colour. M. de *Schomberg*. *Smalts*, all made out of Cobalt, and by the same Process; but some come forth of a finer, others of a worse Colour; according to the different Constitution of the Mineral out of which they are drawn. He has here sent thirteen Samples, viz. Varieties under the Name of *Hoos Blau*: one of ordinary *Hoos Blau*; one of *Elaar Blau*, *quæ Colore non cedit Ultramarino*; six of *Elaar Blau*; one of *Mittel Elaer Blau*; and one of ordinary *Elaar Blau*. These are made out of the Cobalt that is ponderous, grey, and shining; found plentifully in the Mines of *Snebergh*. Being powder'd and wash'd, they roast it to exhale the Arsenick; which they collect in the Flew of their Furnace, run it down, and keep for Use. Afterwards they flux the remaining Calx with Pot-Ashes and white Pebles powder'd; and the Smalt, in fine, appears in form of a Blue-Glass. See the *Philosophical Transactions*, N<sup>o</sup> 293. p. 1753.

\* w. 17. *Cadmia preparata, ad confectionem Orichalci utilis*. M. de *Schonberg*. It is calcined.

\* w. 18. *Lapis Tutia*. This is what rises from the Calamine in making Brass.

\* w. 19. *Nihil Album, sive Pompholyx, ex Fornacibus cupreis. Hamburgh*.

\* w. 20. This appears to be Litharge; 'twas sent from *Fort St. George* by the Name of *Yevay Charrum*. The Surgeons there use it as a Caustick. Mr. *Bulkley*.

\* w. 21. This likewise appears to be a Litharge, and is little different from the precedent. 'Twas sent me by Mr. *Bulkley* from *Fort St. George*, by the Name of *Moordar Tingy*. 'Tis used to dye the Hair black.

\* w. 22. This was given me by Dr. *Ed. Brown*; and is what he in his Travels, pag. --- calls *Iron turn'd into Copper*; from a Spring near the Copper-Mines of *Hern-grunt* in *Hungary*. The Brief of this Transaction is, these Springs, Rivulets, &c. that arise out of the Copper-Mines here, are impregnated with much Vitriol; in which there is also Copper dissolv'd. Indeed the Vitriol constitutes a kind of Menstruum. Upon the putting Iron in, that Menstruum preys upon it, and assumes the ferreous Parts into itself. At the same time it precipitates an equal proportion of the cupreous Parts; a thing common and well understood by Refiners, and all who have been conversant with Solutions in *Aqua Fortis*, and other like Menstrua.

\* w. 23. Copper, very fine; and concreted in a very elegant and observable manner. 'Tis in form of the Letter B; and was form'd, in the manner recited in the precedent, upon the putting a Piece

of Iron of the very same Figure and Dimensions into a Vitriolick Spring in Hungary. *M. Ol. du Mont.*

\*w. 24. *Ferrum in Cuprum mutatum in Fonte Neosolensi in Hungaria.* Dr. Leopold.

\*w. 25. A Piece of Copper in shape of a Piece of Iron, that was put into some Rivulet near *Herngrunt.* *M. Ol. du Mont.*

\*w. 26. *Camentum.* N. B. *Camentum sua natura ferrum est, virtute vero Aqua viva, qua prope Civitatem Eperies in Hungaria oritur, brevi temporis Spatio in Cuprum mutatur.* *M. de Schonberg.* (The same is done in a Rill of greenish Vitriolick Water at *Isol*, five Miles from *Schemnitz.* The Copper precipitates exactly in the very Form of the Piece of Iron, in 1, 2, 3, to 6 Months, according to the Thickness of the Iron. *Mr. Weber.*)

\*w. 27. *Lamina ferrea in Cuprum transmutata.* *Spener. Mus. p. 162. Ex Hungaria.* Dr. Leopold.

\*w. 28. Coarse Pewter appearing to consist chiefly of Lead. 'Tis part of the Bales in which Bohea Tea was brought over from *China.* 'Tis commonly call'd here *Tutanag*, but not rightly; *Tutanag* being the *Chinese* Name for Speltre Ore. *Conf. X. o. 6. supra.*

\*w. 29. *Cuprum rubrum Japonicum.* Borax is cheap in *Persia* and *India*; so that probably the *Japoneses* run their Copper with it: to which probably it owes this fine red Colour.

#### MANTISSA V.

Arma & Instrumenta lapidea, n. Spicula, Jacula, Cunei, Secures, veteris Ævi.

Or Instances of certain Stones, form'd by Men, most of them antiently, and all before the Use of Iron was known; in order to serve for Tools and Weapons, but generally supposed by the Writers of Fossils to have been Natural, and are exhibited by them under the Name of *Cerauniae*, or *Brontiae* and *Ombriæ.*

†w. 1. The *Spiculum*, or Head of an Arrow, made of Flint, part grey, and part brown. Found in one of the *Orkney-Islands*, by Dr. *Wallace.* These Flint *Spicula* are call'd in Scotland, *Elfs Arrows Heads.* Vide *Sibbaldi Prodrum Naturalis Historiæ Scotiæ, Part. 2. l. 4. p. 49.* There are *Spicula* of like shape found also in *Ireland.*

†w. 2. Another bearded or notch'd on each side, shaped with very great Art; of grey Flint. From one of the *Orkney-Islands.* Dr. *Plot*, in his *Natural History of Staffordshire, C. 10. Sect. 8. Tab. 33. Fig. 1.* has exhibited one of a Shape little different, found at *Beresford.*

†w. 3. Another of much the same Shape, but larger, and of a yellowish Flint. From *Guinea.* Mr. *Southwell.*

†w. 4. Another, the Flint of like Colour with the precedent, not bearded. Mr. *William Vernon* A.M. Fellow of *Peter-House* in *Cambridge.* This was found by him in *Maryland.*

† w. 5. Two others, made of a sort of a white glittering Pebble. Found also in *Maryland*. Mr. *Vernon*.

† w. 6. A red Stone, square, oblong, and tapering towards each end; sent by the Name of *Elf-stone*, from *Perthshire*, in *Scotland*.

† w. 7. A Hatchet broad, and flat; of a hard Stone, dusky and near black. From *Nova Britannia*. Captain *Dampier*.

† w. 8. Another, of a Shape more oblong; of a dark brown Colour. From ----- in the *East-Indies*.

† w. 9. Another, less; in Shape not unlike a Wedge. Found near *Canton* in *China*.

† w. 10. Another, still less; from *Virginia*.

† w. 10<sup>b</sup>. Another. *Barbadoes*.

† w. 11. Another, less. From the Island *Barbadoes*.

† w. 12. A Dart-Head; of a grey talky Stone. *Virginia*.

† w. 13. An Arrow-Head; of a light brown Flint, somewhat pellucid. *Ireland*. Mr. *Hugh Howard*.

† w. 14. Another, finely notch'd, or bearded; of a like Flint. *Ireland*. Mr. *Hugh Howard*.

† w. 15. A rough hard Stone, ponderous, and seeming to hold in it Iron, cut into form of a Hatchet. Found in *Tuscany*. Signior *Gambarini*.

† w. 16. A Stone, very hard; red, variegated with white, and a dusky blue. 'Tis betwixt 2 and 3 Inches long; and above an Inch in diameter in the middle; tapering thence, and terminating in a Point at each end. From the Island of *Guam*, one of the *Ladrones*. The Natives use them, commonly, as a *Faculum*, or Dart, in Slings; and do great execution with them. Capt. *Dampier*, as I remember.



A  
CATALOGUE  
OF THE  
FOREIGN FOSSILS

In the COLLECTION of  
J. WOODWARD M. D.

Brought as well from several Parts of *Asia*,  
*Africa*, and *America*; as from *Sweden*,  
*Germany*, *Hungary*, and other Parts of  
*Europe*.

PART II.

Exhibiting the FOSSILS that are extraneous; the  
Parts of Vegetables, and of Animals, digged up  
out of the Bowels of the Earth; in particular the  
Shells of Sea-Fishes: as also the Stoney, Mineral,  
and Metallick Bodies form'd in them.

Ranged and disposed in a Classfical Method, according  
to their several Kinds and Alliances; with an Histo-  
rical Account of each: as likewise various Observa-  
tions, and Reflections.



10 July 1725.

**W**HEN this Catalogue was compos'd, I intended to add to it such extraneous Foreign Fossils as should afterwards come to my Hands; and reserv'd, for that purpose, Pages vacant, as also Numbers intermediate, to which therefore there are no Descriptions added, nor Fossils belonging. Those, which I have receiv'd since, are enter'd into the other additional Catalogues. I shall rejoice that, in the Hurry of my Business, I shall find Leisure, during my Life, to reduce all into one common Method and Series, and one Catalogue.

## INDEX RERUM.

**V** egetable Bodies dug up out of the Earth. Leaves of Plants immersed in Stone. Parts of Trees and Shrubs found buried under Ground. Parts of Branches of Trees and Shrubs petrified, pag. 1. Fruits dug up out of the Earth. Marine Animal Bodies dug up at Land. Vermiculorum Marinorum Tubuli. Patellæ. Dentalia. Nautili, p. 2.

*Ammonitæ*. *Ammonitæ* læves, nullis Strigis per latera transversim ductis. *Ammonitæ* lateribus Strigatis, dorso lævi. *Ammonitæ* strigis Dorsum trajicientibus Simplicibus, p. 3.

*Ammonitæ* strigis Dorsum trajicientibus, bifurcatis. *Ammonitæ* strigis bifurcatis, dorsum trajicientibus, umbilicata. *Ammonitæ* limbo acuminato, inter duos sulcos per totum dorsum ducto. *Ammonitæ* dorso acuminato absq; sulcis secundum dorsum ductis, p. 4.

*Ammonitæ* sulco unico per Dorsum ducto. *Ammonitarum* Fragmenta, & Impressiones. *Auris Marina*. *Neritæ*. *Cochleæ*. *Trochi*. *Conchæ Veneris*. *Cylindri*. *Rhombi*. *Conchæ Persinæ*. *Bilingues*. *Buccina*, p. 5.

*Purpuræ*. *Umbilici Marini*. Appendix. *Cochleæ Terrestres ex Telle effossæ*. *Conchæ Bivalves*, *Pectines*, p. 6.

*Pectinibus affinis Ctenoides*. *Sphondyli*, p. 7.

*Margaritifera*. *Ostrea*. *Ostrea Arborea* quibus scilicet Margines dentati sunt, p. 8.

*Recurvirostra*. *Anomia*, p. 9.

*Denticulata*; s. *Pectunculi Leptopolyglymii Listeri*, p. 10.

———— figura oblonga. *Pectunculi*, p. 11.

*Cardites*, s. *Pectunculi* dorso in utraq; testâ in aciem elato. *Cunei*, p. 13.

*Tellinæ*. *Musculus*; sc. *Fluviatilis*, cardine non dentato. *Ctenoides*.

*Mitylus*, seu *Musculus Marinus*. *Solenes*. *Chamæ*. *Imbricata*.

*Pinna*. *Trivalves*. *Ostreoides*, *Pholades*, p. 14.

*Quinquevalves*. *Anatifera* vulgo dictæ, seu *Bernicle*. *Multi-valves*. *Balani*. *Echini Marini*. Pars 1. Duobus in Testâ foraminibus tuberculis in eorum superficie exiguis admodum Spatagi dicti. Sect. 1. Qui ad unum latus sulcum insignem habent, seu *Cordiformes*. Art. 1. Foraminibus versus latera positis uno sub Fissura: altero, in latere opposito. Art. 2. Spatagi *Cordiformes* uno foramine in mediâ fere basi, altero in ipso sulco, seu Fissura posito. Sect. 2. Spatagi nullo sulco laterali donati utrisq; foraminibus in Basi Testæ. Art. 1. Altero foramine in ipso basis Margine, altero prope oppositum Marginem sito, Galeati vulgo dicti, p. 15.

*Art. 2. Spatagi altero foramine in basis centro, altero in Margine.*

*Divis. 1. Lineis foraminosis à vertice ad Marginem productis.*

*Memb. 1. Figura Conoide, seu Pileati. Memb. 2. Figura compressa, seu Discoides.*

*Divisio 2. Spatagi linearum ordinibus à*

*vertice ortis, sed ad Marginem usq; non pertingentibus. Pars 2.*

*Echini, quibus unicum solummodo in Testa foramen est, idq; in*

*centro Basis positum. Sect. 1. Echini tuberculis admodum exiguis*

*obfiti, cum linearum brevium ordinibus decem ad Marginem*

*usq; non productis, sed eo modo dispositis, ut figuram in superficie*

*ad Pentaphylli folium accedentem referant, ideoq; PENTAPHY-*

*LOIDES haud inepte dici possunt, p. 16.*

*Sect. 2. Echini, cum tuberculis majoribus & magis eminentibus, &*

*Linearum seu Tuberculorum ordinibus à vertice ad Os pertingen-*

*tibus, OVARIi dicti, p. 17.*

*Joints and Parts of Bodies belonging to marine Animals related to the Echini. Entrochi, & Trochita. Entrocho-Asteria. Quippe qua forma sunt Cyliindracea, uti Entrochi: sed sicut Asteria in singulorum Articulorum utraq; superficie stellam pentagonam exhibent, p. 19.*

*Asteria. Crustacea. Pisces eorumq; Partes. Fishes in Stone, p. 20.*

*Ova of Fishes in Stone. Bones, Teeth, &c. of Fishes, p. 22.*

*Bones and Teeth of Quadrupeds. Corpora Marina præsertim Conchylia Massa Lapidea confertim immista, p. 29.*

*Testa aliaq; Animalium Marinorum partes, incerti Generis, p. 31.*

*De Conchylis Fossilibus aliqua Injuria affectis, quippe attritis, erosis, vel compressis. Fossilia Generum incognitorum, p. 33.*



## Vegetable Bodies dug up out of the Earth.

### Leaves of Plants immersed in Stone.

α. 1. **T**HE Impression of part of a pinnated Leaf, resembling the *Osmunda regalis*, but somewhat narrower. Sent by Dr. Scheuchzer, with the Title of *Phyllitis in Cretaceo lapide Oeningenſi à Suevia*.

α. 2. A Leaf something resembling a small Bay-Leaf; sent by Dr. Scheuchzer under the Title of *Phyllitis ex Lapidina Oeningenſi à Suevia*.

\* α. 2. Sent by Dr. Scheuchzer under the Title of *Phyllitis ex Lapidina Oeningenſi*. I confefs I ſhould rather think this the Leaf of ſome Tree of the Pear-kind.

† α. 2. Sent alſo by Dr. Scheuchzer with the Inſcription, *Caffie Ligneæ vel Canella; item Salicis folia in Lapide fiſſili Oeningenſi, Dioceſeos Conſtant*. Theſe Leaves ſeem to be all of a Plant of the ſame Species; and are much leſs than thoſe of the Cinnamon or Canelle. They appear rather to be Leaves of ſome Tree of the Plum-kind.

α. 3. Three pinnated Sprigs of a Fern upon a grey Slate from *Ilmenau*. Sent by Baron *Schonberg*, *Berghauptman*, or Superintendant of all the Mines of *Saxony*, free Baron of the Empire, and Lord Chamberlain of the King of Poland.

### Parts of Trees and Shrubs found buried under Ground.

α. 13. A Piece of Wood dug up out of the Alum-Mines near *Duben* in *Hungary*. Sent by Dr. *Kiſner*, of *Francfort*.

α. 14. *Lignum foſſile ex prato Kellen in Waltikommer Riedt, Territorij Tigurini*. Dr. *Scheuchzer*, of *Zurich*.

### Parts of Branches of Trees, and Shrubs petrified.

α. 25. A Piece of Wood, appearing to be Oak, petrified; from *Virginia*. Mr. *Bird*.

α. 26. A Piece of ſome geniculated Plant, about three Inches in length, and  $\frac{3}{4}$  of an Inch in diameter, ſeeming to be part of a Sugar-Cane. 'Tis petrified. There is an Icon of a Body reſembling this in *Aldrov. Muſæum*, p. 854. N<sup>o</sup> 2. which he calls *Caulis faniculi petrificatus*. This was ſent me by Signior *Agostino Scilla*, Author of the Book intituled, *Lettera circa i corpi marini petrificati*, 4<sup>o</sup>. in *Napoli* 1670. But this Body not coming to his hands till after that Book was published, there is no Icon, nor Account of it there.

a. 27. A Piece of petrified Wood, from ----- in *Armenia*.  
Mr. Barwick.

a. 28. A Body in some parts of a flakey, in others of a fibrous Constitution; with Veins of Spar in it. Found in a Lake in the Island *Antegoa*. 'Twas sent by the name of *Petrified Wood*; but whether it be really such or not, I have not yet had leisure to inform myself. It is harder than Porphyry.

a. 29. A Body of a fibrous and porous Constitution, with stoney Matter lodged in the Interstices of the Fibres of it. Sent by Mr. *Buckley* from *Fort St. George* by the name of *Petrified Wood*. I have not time now to examine whether it be truly so or not.

*Fruits dug up out of the Earth.*

a. 33. Half a Cone, of the Pine-kind, seeming to be of the common Mountain-Pine, very fair, and well preserved, in the middle of a Piece of a hard brown Stone, found in *Calabria*. *Agostino Scilla*. 'Tis not in his Book.

*Marine Animal Bodies dug up at Land.*

Vermiculorum Marinorum Tubuli.

e. 1. A very fair and large Tubulus of a Vermiculus. From *Malta*. There is along with it in the Stone, in which this Verm. lies, a Tooth of a Dog-Fish; and a Piece of the Spine of an Echinus, of that sort that is commonly call'd *Bastoncini di S. Paolo*. *Ag. Scilla*.

e. 2. Another large white Tubulus, twirl'd round, in manner of a flat Cochlea; given me by Dr. *Tennison*, Lord Archbishop of *Canterbury*.

e. 3. Two others not unlike the precedent, but very small; sent by Dr. *Scheuchzer* with the Inscription, *Tubulus marinus fossilis parvus Cornu Ammonis instar in seipsum revolutus, ex Comitatu Neocastrensi. Specim. Lithogr. p. 64. fig. 86.*

e. 4. A fair striated Vermiculus, with its Twirls running forwards much like those of the *Buccina*. From *Malta*. *Ag. Scilla*. This is not described in his Book; being not found till after that was published.

e. 5. A large Tubulus of a Vermiculus, streight; and seeming to have a Valve in it. Dug up near *Bononia*. Dr. *Scheuchzer*.

PATELIAE.

DENTALIA.

NAUTILI.

γ. 1. A Nautilus of the same Species with that found at *Whitton* in *Lincolnshire*, in the *English Catalogue* of my Fossils, d. 15. From the Mountains near *Zurich*. There appear linear Striæ running along the Back of it. This was sent me by M. *Valkenier*, Envoy of the States-General of the *United Provinces* to the *Switz-Cantons*.



γ. 2. A smaller, seeming to be of the same Species, only the linear Striæ on the Back are wanting in this. Sent by *Ag. Scilla*, with the Inscription, *Configurazione di Gambaro, con la Coccia disfatta, nel Isola di Malta*. Found since his Book was publish'd.

γ. 3. Another, of the same Species; found near *Zurich*. *M. Valkenier*.

γ. 4. Another, of a more compress'd Shape. From *Malta*. *Ag. Scilla*. Found since his Book was publish'd.

#### AMMONITÆ.

*Ammonita læves, nullis Strigis per latera transversim ductis.*

γ. 5. Several Joints of a large Ammonites, in which the Sutures plainly appear. Found in a Valley among the Forest-Towns near *Switzerland*. *M. Valkenier*.

γ. 6. Two small Ammonitæ, appearing to be of the same Species with that found at *Alhampton* in *Somerſetſhire*, in the *English Catalogue*, d. 25<sup>x</sup>. From *Altdorf*. *Dr. Leopold*.

γ. 7. Another, little different, only this has a bright shining Armature upon it, and the Sutures are very conspicuous. From *Switzerland*. *Dr. Scheuchzer*.

γ. 7<sup>x</sup>. Another. This is very fair, the Armature fine, the Sutures distinct, and terminates at a Diaphragm. 'Twas found in *Burgundy* in *France*. 'Twas of the same sort exactly with the foregoing: and there are of the very same found in *Oxfordſhire*, *Somerſetſhire*, and other Parts of *England*. *Dr. Scheuchzer*.

γ. 8. Two small ones, having the Dorsæ sharp, and serrated; being of the same Species with that found at *Hannington* in *Wiltſhire*, in the *English Catalogue*, d. 25<sup>†</sup>. From *Zurich*. *M. Valkenier*.

*Ammonita lateribus strigatis, dorſo lævi.*

γ. 9. A pretty large articulate Ammonites, with the Sutures very fine. Found in a Valley among the Forest-Towns near *Switzerland*. *M. Valkenier*.

γ. 10. Another, with undulated Sutures, placed very thick, and close together. From the Fields about *Heſſe-Caſſel*. *M. Valkenier*.

γ. 11. A small Ammonites, with the Dorsum very broad, and a double Order of Studs on the Sides. Found near *Neuſchatel*. *M. Valkenier*.

γ. 12. Another, very flat, the Strigæ on the Sides not appearing ſo plain as in the reſt. Found in the Mountains near *Neuſchatel*. *Mr. Valkenier*.

*Ammonitæ, Strigis Dorſum trajicientibus, ſimplicibus.*

γ. 13. A Segment of an Ammonites. Sent by *Dr. Scheuchzer*, with this Title, *Strombita majoris ſecundum longitudinem ſtriatæ Spira. è Comitatu Neocaſtrenſi. Specim. Lithogr. Helv. p. 59. Fig. 81.*

γ. 14. A small *Ammonites*. Sent by Dr. *Scheuchzer*, with the Inscription of *Strombita majoris secundum longitudinem striati Spira, terna tuberculorum serie instructa. Specim. Lithogr. Helv. p. 59. fig. 81. à Comitatu Neocastrensi.*

*Ammonitæ Strigis dorsum trajicientibus, bifurcatis.*

γ. 15. A Segment of a large *Ammonites*. Found in a Valley among the Forest-Towns near *Switzerland*. M. *Valkenier*.

γ. 16. An *Ammonites*, with the Strigæ placed very close together. Sent by Dr. *Scheuchzer*. Found near *Basil*.

γ. 17. Another, somewhat less. Found near *Neufchatel*. M. *Valkenier*.

γ. 18. Another, with the Strigæ less, and closer. From the same Place. M. *Valkenier*.

γ. 19. Another, with the Strigæ pretty large. From still the same Place. M. *Valkenier*.

γ. 20. Another, with the Strigæ less, and closer together. From the same Place also. M. *Valkenier*.

γ. 20<sup>x</sup>. Another, little different. *Burgundy* in *France*. Dr. *Scheuchzer*. This Species is common in several Parts of *England*.

γ. 21. Two small ones. Sent by Dr. *Scheuchzer*. From *Switzerland*.

γ. 21<sup>x</sup>. Another, of the same Species with one of the foregoing. From *Burgundy* in *France*. Dr. *Scheuchzer*.

γ. 22. A larger, with the Strigæ pretty big, and high, of which some are bifurcated, and others not. Found near *Neufchatel*. M. *Valkenier*.

*Ammonitæ, Strigis bifurcatis, dorsum trajicientibus, umbilicata.*

*Ammonitæ, limbo acuminato, inter duos sulcos per totum dorsum ducto.*

γ. 25. A large *Ammonites*, from *St. Gall*, in *Switzerland*. M. *Valkenier*.

γ. 26. A less, from *Neufchatel*. M. *Valkenier*.

*Ammonitæ dorso acuminato absq; Sulcis secundum Dorsum ductis.*

γ. 27. From *Neufchatel*. M. *Valkenier*.

γ. 28. Another, less, from the same Place. The Ridge of the Back in this is crenated, and there adheres to the middle of the Shell on each side a shining yellow Pyrites.

γ. 29. Another, of the same Species, very fair, from the same Place. M. *Valkenier*.

γ. 30. Another, with the Ridge not near so much crenated. Found near *Altdorf*. Dr. *Leopold* of *Lubeck*.

γ. 31. Two others, with the Strigæ smaller, and closer set. Found near *Neufchatel*. M. *Valkenier*.

γ. 32. A small *Ammonites*, with the Strigæ fewer, but larger. From the same Place. M. *Valkenier*.

γ. 33. Another small one, found near *Zurich*. Dr. *Scheuchzer*.

*Ammonita Sulco unico per Dorsum ducto.*

*Ammonitarum Fragmenta, & Impressiones.*

γ. 34. A Joint of an Ammonites, found near *Neufchatel*. Sent by Dr. *Scheuchzer* under the Title of *Ceratoidis articulus*. *Specimen Lithogr. Helv.* pag. 59. fig. 83.

γ. 35. An Impression of the Outside of an Ammonites upon Stone, very fair, exactly like those two found in *Northamptonshire*, in the *English Catalogue*, d. 98. & d. 99. and made by the Shell of an Ammonites of the same Species. From *Neufchatel*. M. *Valkenier*.

AURIS MARINA.

NERITÆ.

COCHLEÆ.

γ. 50. A Cochlites, of a compress'd Figure. Found near *Neufchatel*. M. *Valkenier*.

γ. 51. Another, very fair, with part of the Shell on, and the Clavicula more rais'd. Sent by *Ag. Scilla*; and seems to be that figured in his Book, *Tab. 16. Fig. 2.*

γ. 52. Another, found near *Neufchatel*. M. *Valkenier*.

γ. 53. Another, very fair. Sent by *Ag. Scilla*, from *Calabria*, but found since his Book came out.

γ. 54. Another, large. Found near *Neufchatel*. M. *Valkenier*.

γ. 55. Another, very small. Sent by the same Person, from the same Place.

γ. 56. *Cochlea tenuiter secundum orbem striata, clavicula medio-criter producta*. The Species is sometimes found upon the Shores of *Maryland*; but this was dug out of the Ground, with other Shells, and Teeth of Fishes, &c. at a great distance from the Sea. Sent by Mr. *Jones*, a Clergyman in that Country.

γ. 57. A Fragment of a *Cochlea, clavicula producta*. Found near *Neufchatel*. M. *Valkenier*.

γ. 60. A Cochlites, sent by Dr. *Scheuchzer*, with the Inscription, *Buccinites, ex Territorio Sangallensi.*

TROCHI.

CONCHÆ VENERIS.

CYLINDRI.

RHOMBI.

CONCHÆ PERSINÆ.

BILINGUES.

BUCCINA.

γ. 100. *Buccinum, clavicula brevi, Strigis 4. secundum testæ volutam eminentibus*. Found with γ. 56. in *Maryland*.

γ. 100\*. Another of the same sort, and from the same Place. This has the upper Shell of an Oyster adhering to it; and is so

broken, as fairly to shew and expose its internal Constitution. *William Vernon*, A. M. Fellow of *Peter-House* in *Cambridge*, found it in *Maryland*.

γ. 101. *Buccinum tuberculis parvis frequentibus asperatum clavicula producta*. Dug out of the Cliffs of the *Baltick-Sea*. There are two Samples of this Species.

γ. 101<sup>x</sup>. *Buccinum parvum verrucosum, clavicula producta*. Ex *Agro Moguntino*. Dr. *Kisner*.

γ. 102. Fragments of a *Buccinum* larve, *clavicula productissima*. From the Cliffs of *Cheasapeak-Bay*, below *Herring-Creek*, on the Western Shore of *Maryland*. Dr. *Krieg* of *Riga*.

γ. 103. *Buccinum, clavicula productissima, Volutis tumidioribus, striatis*. *Maryland*. Mr. *Vernon*.

γ. 104. *Cochlea, clavicula productissima, exigua, cancellata*. Dug up near *Bononia*. Dr. *Scheuchzer*.

#### PURPURÆ.

γ. 110. A small *Purpura*. Found near *Neuschatel*. M. *Valkenier*.

#### UMBILICI MARINI.

γ. 116. Two *Opercula* of a Species of a *Cochlea Marina*. These are commonly call'd by Naturalists *Umbilici Marini*. Sent by *Ag. Scilla*, with this Account, *Pietre di S. Margherita, cioè Opercoli di Turbini, tronati con infiniti altri corpi di Mare fra terra nel Capo della Città di Milazzo*. Tab. xvii. A. A.

#### APPENDIX.

##### *Cochlea Terrestres, ex Tellure Effossa.*

γ. 120. *Cochlea Terrestris interdum unicolor, interdum variegata, item variis fasciis depicta*. *List. Hist. Conchyl.* N<sup>o</sup> 54. This here has a single narrow *Fascia*, and was dug up - - - - Fathom deep, in sinking a Well at *Strasburg*. Mr. *Melmoth*.

γ. 121. Another, that seems to be of the same Species. This has several *Fasciæ* upon it. Found near *Frankfurt on the Main*; and sent by Dr. *Kisner*, with this Title, *Cochlea fossilis terrestris*.

#### CONCHÆ, BIVALVES, PECTINES.

δ. 1. A convex Shell of the *Pecten magnus subrusus, &c.* N<sup>o</sup> 2. *List. Hist. Conchyl.* which Species, as Dr. *Lister* observes, is found in the *Mediterranean-Sea*. This was dug out of the Rocks near *Cadiz*, in *Spain*, where were many more of the same sort: as also several others. Brought to me by Mr. *Clarke*.

δ. 2. A small *Pecten*, with both the flat and the convex Shell. Found in *Arabia Deserta*, by Mr. *Henry Worsley*, who observ'd many Fossil-Shells daily as he pass'd along in that Country. *Confer. δ. 116. infra*. This very ingenious Gentleman, Brother to Sir *Robert Worsley* Baronet, travel'd through, not only *Italy*, and other the more civiliz'd Parts of *Europe*; but likewise, so great

was his Curiosity, and desire of Knowledge, through Egypt, Arabia, and several other Parts of Asia, where few Europeans belides have ever been.

§. 3. The convex Shell of a Peecten, seeming to be of the same Species with that §. Found near Neufchatel. M. Valkenier.

§. 4. The convex Shell of a small Peecten, very fair. From Calabria. Agost. Scilla. This was found since he set forth his Book.

§. 5. Thirteen very fair and entire Shells of a *Peecten inequaliter auritus*. Dug up in Maryland, and sent thence, some by Mr. Jones, others by Mr. Vernon. The biggest is 5 Inches and  $\frac{1}{2}$  in length: the rest of several Sizes, less and less, to the last, which is not half an Inch long. They seem to be of several Ages: and the Growth of different Years. There are both of the upper and under Shells. Some of them have *Balani*, and other Shells adhering to them: as also a thin reticulated Body, found commonly upon Shells at Sea.

§. 5<sup>x</sup>. *Peecten sulcis inequaliter patentibus*. Dug up near Bononia. Dr. Scheuchzer.

§. 6. A Peecten, found 3 Miles from the great River Chaplank, which is 24 Miles from Chesapeake-Bay. Dr. Krieg.

§. 7. One Shell, of a very small Peecten, sent by Dr. Scheuchzer, under the Title of *Pectinites rarioribus striis*. List. Hist. Tit. 48. In Lapide arenoso ferrugineo, ex agro Altdorfino Territorij Norinbergensis.

#### *Pectinibus Affinis CTENOIDES.*

*Conchylium hoc duabus testis constat auritis, altera plana, altera convexa admodum, medio dorso depresso, rostro adunco.* The Shells f. 402, 403, 404, 409, 412, 413. in the English Catalogue belong to this Genus. Those were not so well freed from the Stone, in which they were originally lodg'd, that I could so clearly discover all parts of the Shell, in order to enable me to ascertain and make a right Judgment of the Kind, as I could in the two following, when they afterwards came to my Hands. That Oversight therefore ought to be corrected in that Catalogue.

§. 15. *Ctenoides sulcatus, plurimisq; tuberculis obfitus*. Found near Frankfurt. M. Valkenier.

§. 16. Another, of the same Species. Sent by Dr. Kistner, with this Account: *Reperiuntur Budinga in Comitatu Budingensi, in terra lateritia; & à vulgo dicuntur Krottenstein, ac si diceret, Lapides Bufonum.*

#### SPHONDYLII.

§. 20. A large *Sphondylus*. Found in a Valley among the Forest-Towns near Switzerland. M. Valkenier.

§. 21. Part of a large *Sphondylus*, with the Ridges big, rising and round, and at last standing off from the Shell in a tubular Form. Sent by Dr. Scheuchzer, with this Title, *Concha Fossiles, ex Territorio Basiliensi, quæ illustrent doctrinam de Belemnitis.* By



which he seems to believe the *Belemnita* only Parts of this Species of Shells. But a little further Observation would have shewn him that was a great Mistake.

§. 22. One of those Tubular Bodies, separated from a Shell of the same Species.

#### MARGARITIFERÆ.

#### OSTREA.

§. 35. An Oyster, with both the Shells join'd together; found in the Deserts of *Arabia*, by Mr. *Henry Worley*. Vid. §. 2. *supra*, & 116. *infra*.

§. 36. A single Shell of an Oyster; from the same Country. Mr. *Worley*. 'Tis the lower, or concave Shell.

§. 37. Another, being the upper or flat Shell. From the same Place.

§. 37<sup>x</sup>. The concave Shell of an Oyster, little different from the common *English* Oyster; appearing to be eroded in some parts by Worms. Dug up in *Virginia*. Mr. *Banister*.

§. 38. The flat Shell of an Oyster; from the Rocks on the Shores near *Cadiz* in *Spain*. Found along with the Scallop, §. 1.

§. 39. Two small Oyster-shells, found near *Neufchatel*. M. *Valkenier*. There are of this very Species found commonly in *England*, and particularly about *Marston* in *Northamptonshire*. See the *English* Catalogue, f. 128.

§. 40. A single Oyster-shell, found near *Neufchatel*. M. *Valkenier*.

§. 41. Another, sent by the same Person, from the same Place.

§. 42. Another, of a more oblong Shape; and which seems to be of a different Species. Found near *Neufchatel*. M. *Valkenier*.

§. 43. Another, found near *Lutgeren*, in the County of *Baden*. Dr. *Scheuchzer*.

§. 44. Another, found in the Country about *Neufchatel*. Sent by Dr. *Scheuchzer*, under the Title of *Chama Fossilis*. Spec. Lithogr. p. 55. fig. 75. 'Tis pity this very learned, ingenious, and inquisitive Gentleman had not, with greater Accuracy, adjusted the Kinds of the Fossil-shells he has publish'd in his Book. There are but too many Instances of his Inadvertency in this respect; of which this, of ranking a Shell that is incontestably of the Oyster-kind among the *Chama*, is one. All those which he has done me the favour to present to me, I have here taken care to reduce to their proper Classes and Tribes.

§. 45. Another, very large, and thick; from the Island of *Gaza* near *Candy*.

§. 46. An Ostracites, of an oblong Shape; found near *Neufchatel*. M. *Valkenier*.

#### OSTREA ARBOREA quibus scilicet Margines dentati sunt.

§. 56. A very fair and entire Pair. Found in the Chalk-pits in *Languedoc*. Mr. *John Locke*. A Shell of this Genus is call'd *Rafsellum Lapis*, by Dr. *Lister*, Hist. Conchyl. Tab. 486.

§. 51. Another Pair, found in a Valley among the Forest-Towns near Switzerland. M. Valkenier. Shells of this very Species are found in Northamptonshire, Lincolnshire, &c. See the *English Catalogue*, f. 172. & seq.

§. 52. Another single Shell, of the same Species, found in the same Place. M. Valkenier.

§. 53. Another, that appears to belong to this Genus; but the Edges of the Shell are broken off. Found near Neufchatel. M. Valkenier.

§. 54. Another, less, of the same Species with the last. Found in the same Place. Sent by Dr. Scheuchzer under this Title, *Concha lapidea curvirostro rugosa & tuberculis quandoq; munita, dorso elatiore*. Spec. Lithogr. p. 56. fig. 77.

#### RECURVIROSTRA.

§. 60. A very fair one, with both Shells; found in the Dutchy of Wirtemberg. M. Valkenier. Many of this very Species are found in England. See the *English Catalogue*, f. 181. & seq. One of this Species is figured in Dr. Lister's *Hist. Conchyl.* in his Chapt. *De Conchitis Bivalvibus*, Fig. 38.

§. 61. Another, of a different Species, growing gradually broader towards the Margins. Found in the Dutchy of Wirtemberg. M. Valkenier.

§. 62. Another small one, found in the Canton of Bern, sent by Dr. Scheuchzer, under this Title, *Conchites Anomius rugosus rostro subtereti & insigniter adunco donatus*. List. Tit. 4, 5.

#### ANOMIÆ.

§. 70. A large Pair, smooth, and not sinuated in the Margins. Found near Neufchatel. M. Valkenier. This Species is found in Gloucestershire.

§. 70\*. A Pair less. *Ex Territorio Biennensi*. Dr. Scheuchzer. This Species is common in Gloucestershire.

§. 71. A Stone form'd in a small flat Shell of this kind, found in the same Place. M. Valkenier.

§. 72. A Pair of Shells of this kind, found in Mount Leger near Zurich. Sent by Dr. Scheuchzer under this Title, *Conchites Anomius rostro prominulo & veluti pertuso donatus*, List. Tit. 46. This Species is found frequently in Gloucestershire, and the neighbouring Midland Counties of England.

§. 73. A small one, found near Neufchatel. M. Valkenier. This likewise is common in England.

§. 74. Two Pair, of an oblong Shape, with the Margin sinuated. Found in great plenty on the side of an Hill near Neufchatel. Sent by Dr. Scheuchzer, with this Title, *Concha rarior Anomia vertice rostrato Columna de Purpura*. These are also common in England.

§. 74\*. Another, of the same Species. *Ex Territorio Biennensi*. Dr. Scheuchzer.

§. 75. Another Pair, larger, but of the same Species; from the same Place.

§. 76. Two others, of a Species something different; from the same Place.

§. 77. Two small ones, finely striated, with the Margins not sinuated. Found on Mount Leger near Zurich. Sent by Dr. Scheuchzer, under this Title, *Pectunculites parvus striis capillaribus notatus*. Spec. Lithogr. Fig. 29. p. 23. This Species is likewise found in the Cliffs of Sheppy-Island. See the English Catalogue, f. 321.

§. 78. Four fulcated *Anomia*, with a sinuated Margin. Sent by Dr. Scheuchzer, under the Title of *Conchita seu Pectunculita striati ex Monte Legerio Helvetia*. This Species also is found commonly in the middle Parts of England.

§. 79. Another of the same Species, found in a parcel of *Lapis Judaicus*, brought from Syria.

§. 80. Another, with the Margin but very little sinuated. Found near Neufchatel. M. Valkenier.

§. 81. Three others, of which one appears to be compress'd by some external Force. From the same Place. M. Valkenier.

§. 82. Two more, very large, from the same Place. Dr. Scheuchzer.

§. 83. Two less, and much sinuated; from the same Place. This Species is very common over all the middle Parts of England.

§. 84. Two others, from Dr. Scheuchzer, with this Title, *Conchites striatus striis eleganter expressis armatura Margaritarum simili splendens, seu Pectunculites subspharicus, Listeri Tit. 25. ex Comitatu Neocastrensi*. These are found commonly in England.

§. 84<sup>x</sup>. Two of the same Species: *ex Territorio Biennensi*. Dr. Scheuchzer.

§. 85. Another, dug up at the Depth of 50 Fathom in an Iron-Mine, about 20 Miles from Nemesohl, Hungary. Mr. Weber.

§. 87, 88. Two Stones, seeming to be form'd in Shells of the *Anomia*-kind. Sent by Dr. Kistner, with the Title of *Hysterolithi ex Vinetis Lohensteinensibus*. Wormij Mus. pag. 83.

§. 89. Another. Hess-Darmstadt. M. Valkenier.

DENTICULATÆ; *sc. Pectunculi LEPTOPOLY-GINGLYMI Listeri*.

§. 95, 96. Two Shells of this Kind, found near Mentz. Sent by Dr. Kistner under this Title, *Concha fossiles striata & fasciata*. The Shells are thick, and the Striæ pretty deep, otherwise they differ not from the Species dug up in England, in the English Catalogue, f. 418. which are also now found living upon our Coasts.

§. 97. Another, of the same Species, found at Weinheim in the Palatinate. Dr. Leopold.

§. 98. Another, very perfect, and fair. Found near Neufchatel. M. Valkenier.

§. 98<sup>x</sup>. Two others, little different, only the *Denticuli* are smaller, and the Shells thinner. Maryland. M. Vernon. They seem to be of that Species exhibited by Dr. Lister, under the Name of *Pectunculus subrufus paululum sinuosus dense & leviter admodum striatus*, Hist.

*Hist. Conchyl.* N<sup>o</sup> 76. Tab. 245. which is found commonly on the Shores of *Jamaica*.

§. 99. Another, of a Species somewhat different. Found near *Neufchatel*. *M. Valkenier*.

*Denticulata Figura oblonga.*

§. 105. A Pair of that Species, which is call'd the *Jamaica-Cockle*. Dug up in *Maryland*. *Mr. Jones*.

§. 106. A single Shell, of the same Species. Found in the same Place. *Mr. Jones*.

§. 107. An extreme small Shell, of the same Species, from the same Place. *Mr. Vernon*. This seems to be the Shell of a Creature very young, and not near arrived to a Year's Growth.

PECTUNCULI.

§. 110. A Pair of Shells, found in *Calabria*, very fair, and little different from the *Pectunculus maximus subfuscus valde gravis*. *List. Hist. Conchyl.* N<sup>o</sup>. 108. which in his *Hist. Animal. Angl.* pag. 175. is call'd *Concha à maximis admodum crassa rotunda ex nigro rufescens*. This Species is found living in great Numbers upon the Shores of *Yorkshire*: and is likewise commonly dug up at *Richmond* in *Surrey*. See the *English Catalogue* ----- *Ag. Scilla*. It seems to be that figured in his Book. Tab. XV. Fig. 1.

§. 111. A single Shell somewhat more flat, otherwise little different. Found in *Calabria*. *Ag. Scilla*. Tab. XV. Fig. 2. This indeed seems to be the same with the *English Pectunculus maximus subfuscus* mention'd above. §. 110.

§. 111<sup>x</sup>. Another of a Form somewhat more oblong; otherwise little different. *Maryland*. *Mr. Vernon*.

§. 112. A Stone given me by *Mr. Benj. Middleton*, very perfect, and fair, form'd in a *Pectunculus* not much different from that §. 111. 'Twas found in *Barbadoes* 192 Foot deep, in sinking a Well in *Mr. Middleton's* Plantation there, in the Middle of the Island, on a rising Ground, and call'd for that Reason, *The Mount-Plantation*. 'Twas lodg'd in a Stratum of Stone, of the same Sort with that of which this Body it self is composed. They sunk 60 Foot deeper (*i. e.* to 252 Feet) before he left the Island: but were not then arrived at the Spring. They don't usually find Water in that Neighbourhood till the Depth of about 50 Fathom. They every where find the Earth, from the Surface to the Bottom, disposed into Strata. He does not remember in what Order they lay, but observed they consisted of very various Matter. For, besides the Strata of Stone, he took notice of Clay, Marl, and Sand. This Well cost 150 Pound, or thereabouts, sinking so far. There were great Numbers of these *Conchitæ*, some bigger to twice the Bigness of this, others much less: but all of the same Sort, and he observed no others. Not far from the said Well, blowing up a Rock, he formerly observed several of these *Conchitæ* also lodged in the Stone of that Rock.



§. 113. Another less, found with several more, about 10 Miles on this Side Trent. Mr. Ben. Middleton.

§. 114. Another near Neufchatel. M. Valkenier.

§. 115. Four small flat ones, found near Frankfurt on the Main. Sent by Dr. Kifner.

§. 116. A Stone form'd in a flattish Pectunculus. Found among several others of the same Sort, and Oyster Shells, &c. in *Arabia Deserta*, at 8 or 9 Miles Distance from the Red-Sea, between Tor and Sues. Mr. H. Worsely. Conf. §. 2. *supra*.

§. 117. A Shell of the Species in which the Stone call'd *Bucardites* is form'd. Found in *Calabria*, where they occur plentifully in the Fields and Mountains. Ag. *Scilla*. Tab. XVI. A.

§. 118. The Stone call'd *Bucardites* form'd in a Shell of the same Species with the preceeding, and found in the same Place. Ag. *Scilla*, after his Book was publish'd.

§. 119. A single Shell of a large cancellated Pectunculus, perfect and fair. Dug up in *Maryland*.

§. 120. Another, less, of the same Species, from the same Place.

§. 121. A Pair, of the same Species, very large, and having the Cavity filled with a brown Sand of the same Sort with that in the Stratum in which this and the other Bodies were bury'd. Out of this Sand I pick'd several small Shells and Fragments of larger, both Bivalves and turbinated. 'Tis observable, that there is in one of the Valves of this Shell a round Hole of that Sort that is commonly made by the *Purpura* in the Shells of living Fishes. That Creature thus bores and pierces the Shell, in order to prey upon the included Fish; which it does by passing its Tongue, which is hard, bony, long, and sharp for the Purpose, thorow the Hole it has thus made. This Practice of this Creature was observ'd by the ancient Naturalists: and in particular by *Aristotle* and *Pliny*. ταῖς γὰρ πορφύραις τοσαύτην ἔχει δύναμιν τοῦτο τὸ μόριον [he is speaking of the Tongue] ὥστε καὶ τῶν κογχυλίων διαρρηπῶσι τὸ ἔσθρακον, ἔτιον τῶν ἐρρόμβων οἷς δαλεάζουσιν ἀνδράς. *Aristot. de Partib. Animal.* L. 2. c. 17. *versus finem*. *Pliny* mentions the same thing. *Lib. IX. Cap. 36.* „*Lingua Purpure longitudo sine digitali, qua pascitur perforando reliqua conchylia: tanta duritia aculeo est.*” Tho' there be indeed so many others, that 'tis hardly needful, yet I chuse to take notice of this further Evidence, that these Fossil-Shells were the Covers of Animals that were once living: and the rather, to evince, that these have all the Proofs of that, that can be desired, or that those now found upon the Sea-Shores have. Besides this Shell here, the *Pectunculus subrufus* p. 81. §. 98<sup>x</sup>. the *Pectunculus fasciatus* infra §. 122. the *Pectunculus exiguus* §. 124. and the *Tellina* p. 95. §. 149. are all bored in like manner. There are in a Shell, of this very Kind, §. 119. *supra*, 2 like Holes, that are not pierced quite thorough the Shell. The Reason is, that Shell is very crass, and thick;



so that the Animal, having long labour'd in vain, and without having reach'd the included Fish, desisted.

§. 122. *Pectunculus fasciatus, dente ad Cardinem unico magno. Maryland. Mr. Vernon.*

§. 123. The opposite Valve of a lesser Shell of the same Species. From the same Place. Mr. Vernon.

§. 124. *Pectunculus exiguus crassus fasciatus. Maryland. Mr. Vernon.*

#### CARDITES,

*Sive Pectunculi dorso in utraque testa in aciem elato.*

§. 125. A large Stone form'd in a Shell of this Genus. Found near *Neufchatel*. M. *Valkenier*.

#### CUNEI.

§. 130. A large Stone form'd in a Shell of this Genus, with great Ridges running from the Cardo to the Margin. From *Neufchatel*. M. *Valkenier*. This is of the very same Species with those in the *English Catalogue*, f. 550. & seqq. which are found plentifully in *Gloucestershire*.

§. 131. Another of a longer Shape, and having the Ridges less. Found near *Neufchatel*, sent by Dr. *Scheuchzer* under the Title of *Conchites ab uno Cardinis latere brevissimus, ab altero longissime excurrens, striatus*. Spec. Lithogr. Helv. Pag. 54. Fig. 74.

§. 132. A Stone very fair and entire of that Genus which Dr. Plot calls *Hippocephaloides*. The Margin of this Stone is very finely undulated. Found in the Dutchy of *Milan* by Ag. *Scilla*, after his Book was publish'd.

§. 133. A Stone form'd in a Shell of this Genus, found near *Basil*. Dr. *Scheuchzer*. This is of the very same Species with those in the *English Catalogue*. f. 572. found in *Gloucestershire*.

§. 134. A smaller Stone, with Part of the Shell yet remaining. Found near *Neufchatel*. M. *Valkenier*. This is of the same Species with that in the *English Catalogue*, f. 541.

§. 135. A small one sent by Dr. *Scheuchzer* under this Title, *Conchita bivalvis curviroster Strijs obliquis crassioribus veluti costis donatus*, Spec. Lithogr. Helv. pag. 58. fig. 79. ex Comit. *Neocastrensi*. This is a Species of that Genus which Dr. Plot calls *Hippocephaloides*.

§. 136. Two small ones found near *Neufchatel*. M. *Valkenier*. This is of that Species in the *English Catalogue* ----- being found commonly in - - - - -

§. 137. A large Stone fasciated, having fair Ridges running parallel to the Cardo. Found in a Valley among the Forest-Towns near *Switzerland*. M. *Valkenier*. This is of the same Species with that in the *English Catalogue*, f. 614. being found commonly in several Parts of *Gloucestershire*.

## TELLINÆ.

§. 145. A very large Tellinoides, with Part of the Shell yet remaining upon it, found near Neufchatel. M. Valkenier.

§. 146. Another less from the same Place.

§. 147. The Shell of a very small Tellina. Maryland. Mr. Vernon.

§. 148. *Tellina, crassa, compressa, fasciata, in Margine dentata.* Maryland. Mr. Vernon.

§. 149. *Tellina, magna, crassa; Dentibus, & Sinubus adversis, ad Cardinem solito majoribus.* Maryland. Mr. Jones.

MUSCULUS; sc. *Fluviatilis, cardine non dentato.*

## CTENOIDES.

MITYLUS, seu *Musculus marinus.*

§. 160. A small one, very slender, found near Verona. Ag. Scilla, since his Book came out.

## SOLENES.

## CHAMÆ.

§. 170. *Chama pholas latus ex altera parte obfuscus scaber sive rugosus.* List. Hist. Conchyl. N°. 269. Dug up in Maryland, Mr. Jones. This Species is at this Day found living on the Coasts of England.

§. 171. *Chama fusca, luta planior.* List. Hist. Conchyl. N°. 259. Dug up in Maryland, Mr. Jones. This Species of Chama is found in the Seas on the Northern Coasts of England.

§. 172. Dug up in Maryland, Mr. Jones. This seems to be the *Chama angustior ex altera parte sinuosa.* List. Hist. Conch. N°. 265. which is found in the Seas about Barbadoes.

## IMBRICATÆ.

## PINNÆ.

§. 185. Part of both Shells of a large *Pinna marina*, sent by Ag. Scilla with this Title, *Punta de Penna Marina & altri frantumi trovata nel Monte Mario di Roma, il quale e composto di simili coccia marine.* In the Stone that fills up and also adheres externally to this Pinna, are found other small Shells: and particularly several very fair Pectines. This came not into Ag. Scilla's hands till after he had finished his Book: and therefore is neither described nor figured there.

## TRIVALVES. OSTREOIDES.

## PHOLADES.

§. 10. *Pholas latus, rugosus ex dimidio dorso & asper.* List. Hist. Conch. N°. 279. Dug up in Maryland. This Species is found living on the English Coasts in several Places.

QUIN-

## QUINQUEVALVES.

ANATIFERÆ vulgo dictæ, seu BERNICLE.

## MULTIVALVES. BALANI.

6.20. Five or six of the common *West-Indian* Balani adhering to each other, in the usual manner. Dug up in *Maryland*. Mr. Jones.

6.21. Three Balani of the same Sort, very fair, intire, and all of the same Growth, and Size. Also from *Maryland*. Mr. Vernon.

## ECHINI MARINI.

PARS I. *Duobus in Testa foraminibus tuberculis in eorum superficie exiguis admodum SPATAGI dicti.*

SECT. I. *Qui ad unum latus sulcum insignem habent, seu CORDIFORMES.*

Artic. 1. *Foraminibus versus latera positis, uno sub fissura: altero, in latere opposito.*

7.1. An *Echinus spatagus* with the Sulcus or Fissure very large and deep. Sent by *Ag. Scilla*, and figured by him. *Tab. VII. Fig. 1.* with this Title, *Echino spatago oppresso & petrificato in un tufo di Malta.*

7.2. Another of this Species, but less; from the same Place. Found by *Ag. Scilla* after his Book was publish'd.

7.3. Another, of a Species different from the former, and seeming to be the same with that which is commonly found in the Chalk-pits of *Kent, Essex*, and other Parts of *England*. See the *English Catalogue* ----- Found near *Neufchatel*. M. *Valkenier*.

7.4. A Variety of the same Species with the precedent, found near *Neufchatel*: and sent by Dr. *Scheuchzer* under this Title, *Echinites spatagites vel Brissoides bullatus & striatus. Spec. Lithogr. Helvet. pag. 61. fig. 84.*

7.5. Another of the same Species, but somewhat less; from the same Place. M. *Valkenier*.

7.6. Another, sent by *Ag. Scilla*, and seeming to be that figured in his Book. *Tab. X. Fig. 4.*

7.7 and 8. Two very flat ones, of a Species different from any of the former. *Ag. Scilla. Tab. X. Fig. 1.*

Artic. 2. *Spatagi Cordiformes uno foramine in media fere basi, altero in ipso sulco seu fissurâposito.*

SECT. II. *Spatagi nullo sulco laterali donati utrisque foraminibus in Basi Testæ.*

Artic. 1. *Altero foramine in ipso basis margine, altero prope oppositum marginem sito; GALEATI vulgo dicti.*

Artic.

Artic. 2. *Spatagi altero foramine in Basis centro; altero in margine.*

Divis. 1.—*lineis foraminosis à vertice ad marginem productis.*

Memb. 1. *Figura Conoide seu PILEATI.*

z. 25. A *Spatagites* consisting of a yellowish Flint formed in a *Spatagus Pileatus* of the same Species with those commonly found in the Chalk-pits in Kent, Essex, and other Parts of England. See the English Catalogue ----- sent from ----- in Spain.

z. 26. Another, of black Flint, less, and not so much rais'd. Found near *Neufchatel*. M. *Valkenier*.

z. 27. Another less, from *Bleistorp* near *Neustadt* in the Dutchy of *Holstein*. Dr. *Leopold*.

z. 28. Another, somewhat different, from the same Place. Dr. *Leopold*.

Memb. 2. *Figura compressa, seu DISCOIDES.*

z. 35. A very large one sent by *Ag. Scilla*. Found since his Book was publish'd. There are adhering to it the flat Shells of some Kind of small Bivalve.

z. 36. A lesser, sent by *Ag. Scilla*, and figured in his Book. Tab. XI. fig. 12.

*Divisio secunda. Spatagi linearum ordinibus à vertice ortis, sed ad marginem usque non pertinentibus.*

z. 42. A *Spatagus* extremely fair and perfect, of an oblong Figure, in the Shape of an Escutcheon. The upper Surface of it is rais'd into 5 Ridges, each of which is at the Bottom, almost encompassed by two Rows of small Lines. Sent by *Ag. Scilla*, and figured in his Book. Tab. X. Fig. 3.

PARS II. *Echini, quibus unicum solummodo in Testa foramen est, idque in centro Basis positum.*

SECT. I. *Echini tuberculis admodum exiguis obsiti, cum linearum brevium ordinibus decem ad marginem usque non productis, sed eo modo dispositis, ut figuram in superficie ad Pentaphylli folium accedentem referant, ideoque*

PENTAPHYLLOIDES

*haud inepte dici possunt.*

z. 50. One large, very fair, and entire, flattish towards the Margins, and rising in the Middle. The Teeth, as they are call'd, of this *Echinus*, are yet preserv'd: and appear standing round the Foramen in the Middle of the Shell. Sent by *Ag. Scilla*, who has given a Figure of it Tab. IX. under this Title, *Echino detradall Aldrovando Echino metra, &c.* From Malta.

z. 51. Another very beautiful and perfect, somewhat less with the Margin more sinuated, otherwise not different from the foregoing. *Ag. Scilla*.

z. 52.

z. 52. Another likewise very entire and fair, more copped and rais'd in the Middle than either of the precedent. There adheres to one Side of this a very fair Scallop: and in several Parts of it a fine reticular Substance, which is found commonly affix'd to Stones, Shells, and other Bodies in the Sea, and is generally thought by Naturalists to be the Remains of the Spat of some Kind of Fish. *Ag. Scilla.*

z. 53. Another with the Surface smoother, the Margin thinner and broader, and the Body of it more depress'd. Sent by *Ag. Scilla*: and figur'd by him *Tab. XI. (1) Fig. 3.*

z. 54. Another rising more equally from the Margin to the Middle. *Ag. Scilla. Tab. X. Fig. 2.* I saw a Shell from Sea in the Collection of Mr. *William Cole* of *Bristol*, of the same Species with this.

z. 55, 56. Two others, broad, flat and smooth: with the Figure of a Cinquefoil very fair upon them, but small in Proportion to the Shell. From *Malta. Ag. Scilla. Tab. VIII.*

z. 57. Another somewhat different. Dug up in *Maryland. Mr. Jones.*

z. 58. Part of another, flat and thin; the Sutures very regular, and the Delineations upon the Plates extremely beautiful. Dug up also in *Maryland. Mr. Vernon.*

SECT. II. *Echini, cum Tuberculis majoribus & magis eminentibus, & Linearum seu Tuberculorum ordinibus à vertice ad Os pertingentibus, OVARIJ dicti.*

z. 65. An *Echinus Ovarius* very beautiful and entire with the Mammilla & Papilla or Tubercles upon them very large: and five single undulated Rows of small transverse Lines, reaching from the Top to the Mouth or Hole at the Basis of the Shell. Sent by *Ag. Scilla. Tab. XXIV. Fig. 1.* under the Title of *Istrice di mare petrificato & conservatissimo. Delle colline di Messina.* We find of this Species in the Chalk-pits of *Surrey, Kent, and Essex.* See the *English Catalogue* h. 207, & seqq. The Creatures whose Exuviae these are, are found living at this day in several Seas. I have a very perfect and entire Shell of this very Sort from the *East-Indies.*

z. 66. Another of the same Species with 2 Spines belonging to the Shell in the same Mass of Stone. *Ag. Scilla.* Found since his Book came forth: and therefore not figured or described in it.

z. 67. A Mass of Stone with Part of a Shell of the same Species with the former, but much larger. There is in the same Stone a Piece of a Scallop. Figured by *Ag. Scilla, Tab. XXIV. Fig. 2.* under the Title of *Sasso di Malta bianco, con parte d'Istrice, ed una spina dell' istesso.* Though he mentions a Spine in the Description, and exhibits one in the Figure, yet in the Stone none appears.



z. 68. A Mass of Stone, with several Spines of Echini in it, and Part of an Echinus of the Species preceding: as also a small one entire of a Species somewhat different. *Ag. Scilla. Tab. XXIII. Fig. 2.* From *Messina*.

z. 69. A small *Echinus Ovarius*, of a somewhat more compress'd Shape, otherwise not differing from z. 65, *supra*. Found near *Neufchatel*. *M. Valkenier*.

z. 70. Several Segments and Plates of Echini of the same Species with z. 65. parted at the Sutures. *Ag. Scilla*. Of these he has figured two Plates. *Tab. XXIII. Fig. 3.* under the Title of *Mammelle da Malta*.

z. 71. The Impression of a like Plate, or Mammillæ, upon a grey Flint. *Ag. Scilla*. Found since his Book was publish'd.

z. 72. An *Echinus Ovarius*, very fair, and of a Figure more rais'd than z. 69. being indeed of a different Species, as wanting the five undulated Rows or small Lines which are in all the preceding Species, and having the Mammillæ much less. *Ag. Scilla. Tab. XIII. Fig. 1.* From *Messina*. To the Bottom of this adheres a small Shell seeming to be of the same Species.

z. 73. Another, of the same Species, compress'd by some external Force. *Ag. Scilla. Tab. XXVI. Fig. 1.* From *Messina*.

z. 74. Another of the same Species, also compress'd, but in a different manner. From the same Place. *Ag. Scilla*. This seems to be that figured by him, *Tab. XXVI. Fig. 2.*

z. 75. Another compress'd in a still different manner. From the same Place. *Ag. Scilla. Tab. XXVI. B.*

z. 76. Another differently compress'd, from the same Place. *Ag. Scilla. Tab. XXVI. Fig. ult.*

z. 77. A small Echinus of a Species somewhat different from the preceding. From *Neufchatel*. *Mr. Valkenier*.

z. 91. A Spine of an Echinus in a Mass of Stone. *Ag. Scilla*. There are in the same Mass Fragments of several *Mycetites* not unlike that exhibited by him in the Stone. *Tab. XXIII. Fig. 1.* under the Name of *Poro*.

z. 92. Several Spines of *Echini Ovarij*. *Ag. Scilla. Tab. XXIV. Fig. 3.* under the Title of *Spine d'Istrice petrificate, dette in Malta dal vulgo, Bastoncini di S. Paolo*.

z. 93. Part of the Spine of an *Echinus Ovarius*. Sent by Dr. *Scheuchzer*, under the erroneous Title of *Lithophyton, sive spinosus Lapis Wagneri Hist. Natur. Helv. - - - - - & Scheuchzeri Spec. Lithogr. Helvet. pag. 20. fig. 26.* Found on Mount *Leger*. This Sort is sometimes also found in *England*.

z. 94. Another Spine of a different Echinus from the same Mountain, Dr. *Scheuchzer*. This Sort is also not uncommonly met with in the Quarries of *Oxfordshire*, *Gloucestershire*, and *Northamptonshire*.

z. 95. Four others from *Neufchatel*. *M. Valkenier*.

z. 96. Two Spines of Echini, very thick, of an oval Shape, and like those brought from *Syria*, under the Name of *Lapis Judaicus*. Found near *Neufchatel*. *M. Valkenier*.

§. 97. A great Number of Spines of Echini of different Sizes and Figures; brought from *Syria*, under the Name of *Lapis Judaicus*. These Bodies were by Naturalists ever reputed meer Stones; but in a Lecture that I read publickly in *Gresham College*, May 19. 1693, I demonstrated them to be Spines of Echini, to the full Satisfaction of the Auditory.

*Joints, and Parts of Bodies, belonging to Marine Animals related to the Echini.*

¶. 1. A Joint of an articulated Body, sent by Dr. *Scheuchzer*, under the Title of *Dolioli figura Lapillus. Specim. Lithogr. Helvet. pag. 5. fig. 7.* From Mount *Leger* near *Zurich*. This Body is commonly dug up in the Chalk-pits of *Surrey, Kent*, and *Essex*. See the *English Catalogue*.

¶. 2. A Body sent by Dr. *Scheuchzer*, under the Title of *Biretiformis Lapillus. Spec. Lithogr. Helv. pag. 7. fig. 9.* Found on Mount *Leger*.

¶. 3. A small Body thick set with little Cavities on one Side, and a pentagonal stellar Figure on the other. Sent by *Ag. Scilla*, under the Title of *Animale marine curiosissimo petrificato. From Messina.*

¶. 4. An oblong bony Body: strigated in a various manner, but chiefly transversely. Dug up, with the *Lapis Judaicus* in *Syria*.

#### ENTROCHI & TROCHITÆ.

§. 1. The Head of an Entrochus, consisting of five Plates of the Shell to which it originally adhered: and several Joints or Trochi, rising from it. Dug up with the *Lapis Judaicus* in *Syria*.

§. 2. Another like Head, but less: and without any Trochi joining to it. Sent by Dr. *Scheuchzer* with the Title of *Modiolus Stellatus. Spec. Lithogr. Helvet. pag. 10. fig. 13.* From Mount *Leger*.

§. 3, & 4. A Trochus, and several Joints of an Entrochus, united in one round Column, both dug up, along with the *Lapis Judaicus* in *Syria*.

§. 5. Entrochi from *Hess-Cassel*. Mr. *Valkenier*.

§. 6. Trochitæ *Hildesienfes*. Dr. *Kisner*.

§. 7. An Impression of a Trochus upon Stone. Sent by Dr. *Kisner*, under the Title of *Trochita Matrix in Silice fluviatili prope Confluentes. Coblentz.*

#### ENTROCHO-ASTERIÆ.

*Quippe qua forma sunt Cylindræa, uti Entrochi: sed sicut Asteria in singulorum articularum utraq; superficie Stellam pentagonam exhibent.*

¶. 1. Entrocho-Asteria. From *Hess-Cassel*. M. *Valkenier*.

λ. 2. Several Joints of *Entrocho-Asteria*. Sent by *Ag. Scilla*, with the Title of *Varij Stelletti marini petrificati trovati in Malta*. Found after his Book was publish'd.

λ. 3. Joints and Columns of the same Genus. Sent by Dr. *Scheuchzer*, under the Title of *Asteria columnaris Entrochita similis varietates. Spec. Lithogr. Helv. pag. 2, 3. fig. 1, 2, 3.* From Mount *Leger*.

#### ASTERIÆ.

κ. 1. *Asteria* from *Hess-Cassel*. *M. Valkenier*.

κ. 2. *Asteria* from *Malta*. *Ag. Scilla*. Sent with the *Entrocho-Asteria*. N<sup>o</sup>. 1, 2. under the Title of *Varij Stelletti marini petrificati*. Found after his Book was publish'd.

#### CRUSTACEA.

λ. 1. A Crab little different from the common Sea-Crab living upon our Coasts. Given me by Mr. *Charlton* alias *Courteyn*, who said it was brought him from *Persia*, digg'd up there: but he did not enquire in what Part of that Country.

λ. 2. Some Parts of the Shell of a Crab with the Chelæ or Claws, one of them pretty large: and Part of two of the Legs thick set with little Knobs as is usual in this Kind. Sent by *Ag. Scilla*, under this Title, *Granchio petrificato e mezzo disfatto dal Isola di Malta*. 'Twas not found till after his Book was publish'd.

λ. 3. Another Claw of a Crab almost entire. *Ag. Scilla*. Found near *Messina*: and figured in his Book. *Tab. XIX. Fig. 1.*

λ. 4. Part of the Claw of a Lobster. *Ag. Scilla*. Found in the Island of *Malta*, after his Book was publish'd.

λ. 5. Two small Bodies, seeming to be the crustaceous Flaps of the Tails of some Fish of the Lobster-kind. From *Malta*. *Ag. Scilla*, after his Book was publish'd.

#### PISCES eorumque PARTES.

##### FISHES in Stone.

μ. 1. A scaly Fish with a forked Tail, about 7 Inches long, and near two Inches over where thickest. The Head, one of the branchial Fins, and the Body with the Scales and Tail, appear all very fair. It lies in a blackish ponderous hard Slate, [*the Germans call it Shiver-stone*] dug up near *Isleb* in *Thuringia*. Given me by Mr. *Godfrey*; to whom it was presented by Dr. *Hoffman*, Publick Professor at *Hall* in *Saxony*.

μ. 2. Another, 6 Inches long, of a more slender Shape than the preceding, dug up also near *Isleb*. *M. de Schonberg*.

μ. 3. Another little different, sent by Dr. *Kisner*, with this Title, *Lapis fissilis Islebianus, Pisces Lineamenta ex Pyrite constantia referens*.

μ. 4. Another also from *Isleb*. The Body of this is fair: but the Head is wanting. *M. de Schonberg*.

μ. 5. Another, in which the Tail, and, at about 2 Inches Distance, the two opposite Fins both appear. In this the Slate is broken: and the former Part of the Fish wanting. From *Isleb*. *M. de Schonberg*.

μ. 6. Another, not much different, from the same Place. *M. de Schonberg*.

This and the foregoing Fishes from *Isleb* are all upon a ponderous Slate of a dusky blackish brown Colour, hard, and seeming to hold some Metal. The Fishes upon this Stone are all so thin, and flat, and have taken up so little room in the Stone, that they appear to be only the Skins or Exuvia, rather than entire Bodies of Fishes. But that is the less strange, when 'tis known how easily the Bodies, and even the very Bones of some Fishes, liquate and dissolve. And indeed these are found lodged among metallick and mineral Matter: and particularly Marcasite, which is compos'd of Arsenick, Sulphur, Vitriol, and other like Salts. Now these, when in Water, and in a State of Solution as they were, would together constitute a Menstruum that might contribute greatly to the Dissolution of the Flesh of these Fishes. And what renders this more probable, is, that they were sustain'd in it for a considerable Tract of Time, before they settled down with that mineral Matter which compos'd the Strata, wherein we now find these Fishes inclosed. 'Tis known that the Fins, Tails, Skins and Scales of Fishes, consist generally of Parts much more tenacious and consistent than the Flesh of them: and consequently would not be so easily wrought upon. Of all these the Scales are square, or rhomboidal: and do not terminate round as those of the common scaly Fishes usually do. Many of them are of the Complexion that they are of naturally, and whilst the Fish is living: I mean whitish, bright, and shining. Some indeed carry a Gloss of Purple, others of greenish or yellow; but whether that be natural, or owing to the Minerals among which they have been so long lodged, is not so easy to determine. The Scales in these are commonly very fair, plain, and well preserv'd: as are also, in most of them, the Tails, Fins, Heads, and Jaws, which indeed are the Parts that are the most hardy and durable. In those that came from *Syria*, chiefly the Skeletons of the Bones, as likewise the Tails, and the Fins, are well preserv'd, and frequently Scraps of the Flesh, but always stript of the Skin: nor do any Scales appear, either in those that here follow, or any others that I have seen.

μ. 7, 8, 9. Three Skeletons of Fishes very fair with the Heads, the Gills, Scraps of the Flesh and the Tails. From ----- near *Canobine*, in Mount *Libanus*.

μ. 10. Another, likewise very fair, sent by *Ag. Scilla*, with this Title, *Pesce petrificato nell rocche della Citta di Baruta*, i. e. *Berytus*, *Phœnicia*.



μ. 11. A whitish sort of Slate, with the Skeletons, Tails, and other Remains, of two Fishes in it. From *Tripoli disoria*, in the Province of *Castravau*, in which they are common. Dr. *Sherard*.

μ. 12. A Piece of the same Slate, from the same Place, having on it the intire System of a small Fish, very fair.

μ. 13. *Pisciculus in Lapide fissili, Vallis Bolca, Ditionis Veranens. M. Bourguet.*

μ. 14. *Pisciculus ex Lapidina Oeningensi, qua est in Ditione Constantiensi.* Dr. *Scheuchzer*. These two Pieces of Stone were originally contiguous: and, being split, part of the Fish adheres to one Piece of the Stone, the rest to the other. The Fish is very fair, and well preserv'd.

μ. 15. Two small Star-Fishes in the whitish Slate, wherein the Skeletons of Fish are commonly found, in *Canobine*, on Mount *Libanus*. This was part of a larger Piece, whereon were Remains of several small Fishes.

#### OVA of FISHES in Stone.

μ. 20. A Mass of brown Stone, composed chiefly of small globular Bodies, appearing to be the *Vesicula* of the Ova of Fishes, fill'd with a very fine Sand. Sent by Dr. *Scheuchzer*, with this Account, *Hammites subflavi coloris ex Birsa Flumine. Spec. Lithogr. Helv. p. 40. fig. 22.*

μ. 21. Another Mass, with like Bodies in it. Sent by Dr. *Scheuchzer*, with this Account, *Hammites, seu Meconites, nivei candoris, ex Birsa Flumine. Spec. Lithogr. Helv. p. 40. fig. 55.*

μ. 22. Another, brown. Sent by Dr. *Kisner*, under this Title, *Hammites, seu Meconites, subflavi coloris.* Found near *Frankfort* on the Main.

μ. 23. Another, very hard, so as to take a fine Polish. Sent by Dr. *Scheuchzer*, with the Title, *Marmor Hammiticum subflavi coloris, ex Raurica Valle.* This appears to be part of a Nodule, or Peble.

#### BONES, TEETH, &c. of FISHES.

μ. 30. Part of a large Tooth, round, and tapering. It seems to have been a Tusk of the Morsé, or Walrus, call'd by some the *Sea-Horse*. Sent by *Ag. Scilla*, under this Title, *Ivorio calcinato del Tempo, trovata nella Cave di Malta e sperimentato non inferriore alla vero.* He thought this part of the Tooth of an Elephant, as indeed these are generally reputed. I take them rather to be of the Morsé. This is certain, they are generally dug up along with the Teeth of Fishes, as also Shells, and other marine Bodies.

μ. 31. Part of another, less, dug up in the Dutchy of *Wirtemberg*, along with the Whale's Tooth, μ. 40. *infra*. There are upon the Surface of it fuliginous or halituous Delineations of Shrubs, as likewise upon the Whale's Tooth. *M. Valkenier.*



μ. 32. Two Pieces of a large Tooth, being broke off from one kept in the Duke of *Wirtemberg's* Musæum, and presented by the Keeper to Captain *Richard King*, who gave it me. It was dug up in that Dutchy, probably along with the precedent; and has like Delineations upon it. The Keeper call'd it *Ebur Fossile*; and thought it produced naturally in the Earth.

μ. 33. Two other like Pieces. Sent by Dr. *Sheuchzer*, with the Inscription, *Unicornu Fossile-Canstadiense*. Dr. *Spleissius* has wrote a Treatise about this, and other Bodies dug up there, under the Title of *Dissertatio de Cornibus & Ossibus fossilibus Canstadiensibus*, 4<sup>o</sup>. *Scaph.* 1701.

μ. 40. A very large Grinder of some cetaceous Fish, weighing ----- perfect and intire. Dug up in the Dutchy of *Wirtemberg*, along with μ. 33. M. *Valkenier*.

μ. 50. Two Teeth of the common Shark, or *Canis Carcharius*. *Ag. Scilla*, Tab. III. Fig. 1. His Account of them is, *Dente di Lamia petrificati detti Glossopetre ordinatamente raccolti in Sasso di Malta*. Both of them are finely serrated about the Edges, and have the Points inclining to one Side.

μ. 51. A very large Tooth, of the same Species of Shark, perfect and fair, near 5 Inches long, and almost 4 broad at the Root. From *Malta*. *Ag. Scilla*. Found since his Book came out. This is serrated in like manner, and inflected to one side, as are all the following, to μ. 57. inclusive.

μ. 52. Another as perfect, and near as big; from the same Place. Given me by Mr. *Samuel Doody*.

μ. 53. Another something less. Sent by *Ag. Scilla*, and figured by him, Tab. VI. Fig. 1.

μ. 54. Another, still less than the precedent; but very fair. Given me by Dr. *Tennison*, Lord Archbishop of *Canterbury*, with part of the Stone in which it was originally lodg'd.

μ. 55. Another, with part of the Stone in which it lay. *Ag. Scilla*, Tab. V. Fig. 2. from *Malta*.

μ. 56. Another, exactly of the same Shape, but something less; Found in *Virginia* by Mr. *Banister*. Given me by Mr. *Doody*.

μ. 57. Another, of still the same Shape, dug up in *Maryland*. Mr. *Jones*.

μ. 58. Another, lying in the Stone, from *Messina*. This has a small Apophysis rising from the Root on one side.

μ. 59. Another, slenderer, and not serrated on the Edges. Found by Mr. *Banister* in *Virginia*, and given me by Mr. *Samuel Doody*.

μ. 60. Another, of much the same Shape, not serrated, with two small Apophyses from the Root on each side. Found in digging near *Ghent* in *Flanders*.

μ. 61. Five small Teeth, being those figured by *Ag. Scilla*, Tab. XIV. N<sup>o</sup> 1, 2, 3, 4, 5. and sent by him with this Account in writing; *Cavate di mano del Autore nelle Colline di Messina*.

μ. 62. Several Teeth also of Sharks, of various Sizes and Shapes. Found, some in *Malta*, others near *Messina*, by *Ag. Scilla*. See his Book, Tab. VII.

μ. 63. A Tooth of a Shark, serrated on the Edges, and large; being above 4 Inches long, but not near so much inflected as the former all are, except some among those in μ. 61 & 62. From *Calabria*. Found by *Ag. Scilla*, after his Book was publish'd.

μ. 64. Another, in Shape little different, but less. From *Maryland*. Sent by Mr. *Jones*.

μ. 64<sup>a</sup>. Two more, of nearly the same Figure, and Size; but somewhat thinner and flatter. From the same Place. Mr. *Vernon*.

μ. 64<sup>b</sup>. Two others, less, and having the Cuspides a little inflected towards the Left-Hand. From the same Place. Mr. *Vernon*.

μ. 64<sup>c</sup>. Two, still less, with the Cuspides verging also the same way. These have the Edges smooth, and not crenated, or serrated. From the same Place. Mr. *Vernon*.

μ. 64<sup>d</sup>. Two, little different, only the Cuspides verge towards the Right-Hand. Also from *Maryland*. Mr. *Vernon*.

μ. 65. Three small ones, sent by Dr. *Leopold*, with the Inscription *Glossopetra Luneburgensis*.

μ. 66. Two Sharks Teeth, near 2 Inches in length, inflected, not sideways, as several of the precedent are, but inwards. Dug up in *Maryland*. Mr. *Jones*. There are in the Collection μ. 62. from *Malta*, two that are exactly like these.

μ. 67. Another, inflected in a manner different from all the foregoing, viz. outwards. 'Tis also a little twisted towards the Point. 'Tis one of the Fore-Teeth, or Apprehensores of a Fish, of the Shark or Dog-Fish Kind. *Ag. Scilla*. It seems to be that graven, Tab. VI. Fig. 4. under the Title of *Dente di Canicola*.

μ. 67<sup>a</sup>. Another, less. *Maryland*. Mr. *Vernon*.

μ. 68. Another like Tooth, but somewhat less. Found near *Neufchatel*. M. *Valkenier*.

μ. 69. Another, still of the same Shape. Sent by Dr. *Scheuchzer*, with the Inscription, *Glossopetra Alzeiensis, ex Palatinatu de quibus*.

μ. 70. Another, little different, only smaller. From *Maryland*. Mr. *Jones*.

μ. 70<sup>a</sup>. Two, smooth, slender, and a little inflected towards the Right-Hand; the Root large, with 2 Apophyses arising out of it on each side the Tooth. *Maryland*. Mr. *Vernon*.

μ. 71. A Tooth belonging to a Dog-Fish, of a Species much different from any of the foremention'd. This Tooth is flat, and very broad at the Bottom; the Point not rising very high, but is hook'd or inclin'd to one side. 'Tis serrated all round: the Serratures are larger and deeper than in any of the former. 'Tis an Inch and a quarter in length, and very near as much between the two extreme Fangs of the Root. *Ag. Scilla*. 'Tis bedded on a softish Stone, which he calls a *Tophus*, in which it was originally lodg'd; and there adheres to one side of the Stone, a Piece of the Shell of a Pecten. *Malta*.

μ. 72. Another of the same sort; from the same Place. *Ag. Scilla*, after his Book was publish'd.

μ. 73. Ten more of the same. *Maryland*. Mr. Jones, and Mr. Vernon. These are of several Sizes, and have the Cuspides inflected, some towards the Right-Hand, and others towards the left, as is usual in the Teeth of the same Jaw, as they happen to stand of one side of it or the other.

μ. 74. Another, of the same Shape, but with the Serratures considerably smaller, especially towards the Point. *Agost. Scilla*. From *Malta*.

μ. 74<sup>x</sup>. Another, little different, but that the Serratures towards the Point are wanting in this Tooth; being perhaps only worn out by the chewing. Dug up with μ. 73. in *Maryland*. Mr. Jones.

μ. 75. Two others, small, with the Roots not so broad. From *Malta*. *Ag. Scilla*.

μ. 75<sup>a</sup>. Sixteen small ones, of various Shapes. All dug up in *Maryland*. Mr. Vernon.

μ. 76. Another an Inch and 3 quarters in length; thick with Tubercles in several Parts of it. The Edges in this are undulated, as well as serrated. Found near *Messina*, by *Ag. Scilla*, after his Book was out.

μ. 77. Another, of a different Shape from any of the former; being very broad and thick at the Root; but the Body of the Tooth very short and low. This is serrated round the Edges. From *Calabria*. *Ag. Scilla*. Found after his Book was out.

μ. 78. A Mass of Stone, with 2 large Teeth, each rising to an obtuse Point from a broad Bottom. These are serrated on the Edges; but the Serratures are deeper and grosser than in any of the rest. They lie both in the same manner, and on the same Plane: and there are some Remains of a third also in the same Plane, and at the same Distance. *Ag. Scilla*, Tab. xii. Fig. 1. His Account of it is *Tufo di Malta, che contiene una parte di Ganascia con tre denti incassati & petrificati*. There is a Seam in the Stone, which is, I suppose, what he imagin'd to be the Jaw of the Fish: but nothing like a Jaw appears here. And in truth the Teeth of Fishes of the Dog-Fish Kind, are never infix'd in their Jaws; being only held on by means of Muscles, so that they can move them, raise them on end in their Mouths, and lay them down flat again at pleasure.

μ. 79. Part of the Tooth of a Fish that *Ag. Scilla* has given an Icon of the Head and Teeth of, Tab. xxvii. and of the Teeth more distinctly Tab. i. He calls this Fish *Pesce Vacca*. This Tooth was dug up in *Malta*, where they are dug up in great Numbers. He has given a Figure of it, Tab. iv. Fig. 1. It is composed of several Spikes, rising from the Root in the same Plane, in a cristated Form.

μ. 80. Two Teeth, an Inch and a quarter in length, somewhat inflected, of a conical Figure, and a brown Colour. From *Malta*. *Ag. Scilla*. One of them has some part of the Root remaining.

These

These were found since his Book came out. We dig of the very same not uncommonly in the Quarries of *Oxfordshire*, and *Northamptonshire*.

μ. 81. Another of the same sort, but smaller; with the Root depending from it intire. *Malta. Ag. Scilla*. He sent together with it, several Teeth of this very sort, out of the Jaws of a Species of Fish of the Wolf-Fish-Kind, taken in the Sea adjacent to *Sicily*. By this it appears, that the Tooth is join'd to the Root by a Suture.

μ. 82. Four others of the same Form, but much less. They are of a reddish brown Colour, but have the Tips or Points white. From *Malta. Ag. Scilla*, after his Book was publish'd. These are the Fore-Teeth of a Fish of the Wolf-Fish Kind, found at this day living in the Seas about *Sicily*. He sent me the Jaw of one taken there; of which he has publish'd an Icon, Tab. ii. Fig. 4.

μ. 83. Another, brown, in shape a little flatted near half an Inch long, the upper Part terminating in three Points. There adheres to this a Root of  $\frac{3}{4}$  of an Inch long. From the same Place. *Ag. Scilla*. Found since his Book came forth.

μ. 90. Several boney Bodies, from  $\frac{4}{10}$  to  $\frac{8}{10}$  of an Inch in Length, of a flattish Shape, the broadest near  $\frac{1}{3}$  of an Inch over. There run along the two opposite Flats of these Bodies, for their whole Length, parallel Lines; which seem to be so many Commissures, and so the Bodies composed of several Plates joining at those Lines. I have not seen any thing exactly like them; which is far from strange, considering the vast Diversity of Marine Animals yet undescribed, and unknown, and how imperfect Accounts we have of the Parts of those that are known. These seem by their Structure, to have been of the *Officula* that are found in the Heads of some Kinds of Fishes, rather than Teeth. Dug out of the Earth in *Malta. Ag. Scilla*, after his Book was publish'd.

μ. 91. A Tooth, flat, and ending at the Top in an Edge, about  $\frac{4}{10}$  of an Inch in Height, and  $\frac{3}{10}$  in Breadth. It appears to be one of the Incisores, or Fore-Teeth of some Species of *Lupus Marinus*. Dug up in *Malta*.

μ. 95. A very elegant Body, boney, appearing to have been the Palate of some Fish of those Kinds which have their Palates boney, which several have. It is composed of several thin Plates, placed edgeways by one another. From *Malta. Ag. Scilla*, after his Book was out.

μ. 100. A boney Body in figure somewhat approaching an Oval, about an Inch long, and  $\frac{3}{4}$  of an Inch over; consisting of several *Tabellæ* placed horizontally one upon another, being composed of several small round Bodies, some of them white, others yellow, each about  $\frac{1}{10}$  of an Inch in Diameter. The Body is not equally thick in all Parts; and does not any where exceed  $\frac{1}{2}$  of an Inch in Thickness. This Composition, the Fineness of the Colours, the Smoothness and Politeness of this Body render it extremely elegant and beautiful. It seems to have been the boney Palate of some kind



kind of Fish\*. There are besides this three Fragments more of the same sort, one of which I caused to be cut; and thence learned that it is very hard, and takes a good Polish. The upper Surfaces of these Palates are smooth, appearing to have been worn by the mastication and chewing of the Fish; for in such Parts in which the Plates are broken, or separated so as to discover those round Bodies within, where they have suffer'd any Attrition, as those in the Surface have, they appear to be each convex on one side, and concave on the other, the lower Orders of them being by that means inserted into, and join'd with the upper. From *Malta*. *Ag. Scilla* after his Book was out.

μ. 105. Several Parts of the boney Tongue of a sort of *Paflinaca Marina*, common in the *Brasilian* Seas, and call'd there *Nari Nari*. These were dug up in *Maryland*. Mr. *Jones*. There is an Account of them in *Philosophical Transactions*, N<sup>o</sup> 232. p. 674.

μ. 106. Another like boney Substance, either of the same Body, or very like it, from the same Place.

μ. 115. Teeth of the *Lupus Piscis*, both of the conick and of the flat Sort; which last are usually call'd *Bufo nitæ*. Dug up in the Island *Malta*. *Ag. Scilla*. He has caused some of these to be figured, Tab. II.

μ. 120. Two little boney Plates lying in the Tophus in which they were found. They were commonly dug up with the *Bufo nitæ*, and both those and these are usually call'd in *Malta*, *Occhij di Serpenti*. *Ag. Scilla*.

μ. 130. Seven Bodies seeming to be Bones out of the Heads of some Fishes. *Malta*. *Ag. Scilla*. Found after his Book was published.

μ. 135. A boney Body of the same shape with those found in *England*, and commonly call'd *Siliquastra*; but larger than they usually are here. This was dug up in *Syria* along with the *Lapis Judaicus*, and other marine Bodies.

μ. 140. A boney Body of an irregular Figure,  $\frac{3}{4}$  of an Inch long, and  $\frac{1}{4}$  of an Inch broad near the middle. Found near *Riga*. Dr. *Krieg*.

μ. 145. Four flat Bodies from  $\frac{1}{2}$  an Inch to an Inch and  $\frac{1}{2}$  in length, of a compress'd Figure, and serrated on each Edge. Dug up at *Malta*. *Ag. Scilla*; after his Book was out. These are not unlike the *Aculeus* of the *Paflinaca Marina* of that Species which is call'd the *Sting-Ray*.

μ. 150. Three concave Bodies pointed at one end, and gradually expanding and enlarging quite to the other. *Ag. Scilla*. He takes them for *Rostra*, or Beaks of *Polypi Marini*. He found them in the Rocks near *Messina*, after his Book was published.

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\* A considerable Part of the Mouth of the common Thornback is lined and covered with a Crust composed of small round Bodies, not unlike these in shape, but they are thinner, and in only one single *Tabella*.



μ. 151. Four boney Bodies, with the Rostrum less picked than the foregoing, much shorter, and the Roots of it very long, and expanded very wide. *Messina. Ag. Scilla.* Found since his Book came out.

μ. 152. A boney Body, channel'd, and somewhat inflected two Inches in length,  $\frac{6}{10}$  of an Inch in breadth at one end, and gradually lessening to the other. *Ag. Scilla.* Tab. xiv. F. 4. There are along with this three others. He thinks them to be *Rostri d'Animali Simili al Polipo.*

μ. 154. A small Piece of Bone, having its Surface of a green Colour, and its interior Parts of a blue; broke off from a much larger. That is throughout of the same Colour. It seems to be part of the scutellated Bone of a Sturgeon; being flat, of a porous or cellular Constitution on one side, tho' the Cells be somewhat worn down, and flatted; and smooth on the other. 'Tis about  $\frac{1}{2}$  of an Inch in thickness, 3 Inches long, and 1 Inch and  $\frac{1}{2}$  broad. Taken up near *Herngrundt* in *Hungary*; colour'd by the Water of the rich Copper-Mines. Given me by Dr. *Edward Brown*, President of the College of Physicians. Those Bodies that the Jewelers call *Turcois-Stones*, are no other than Pieces of Bones tinged blue by the Copper-Ore, amongst which they were lodg'd. These they cut, polish, and set in Rings. And indeed the same learned Gentleman, in his Travels, p. 68. informs us, that in those very Copper-Mines of *Herngrundt*, are Stones found of a beautiful green and blue Colour; and one sort upon which *Turcoises* have been found, and therefore call'd the Mother of the *Turcois*. By this I am the better enabled to apprehend an obscure Passage in *P. Poterius's Pharm. Spagy.* l. 2. c. 25. where he says, that in the Cabinet of *S. Cassiani del Pozzo* at Rome, he saw "Turcois-Stones\* made of "Ebur-Fossile, exactly like the true natural *Turcoises*, agreeing "with them in all respects, in Colour, in Hardness, and in Virtues."

μ. 160. Six Vertebra's of the Back-Bone of a large Thornback, lying in Stone obliquely, and in a manner that shews they were put into it by some considerable Force. Sent by *Ag. Scilla*, with this Inscription, *Vertebre di Pesce impastate insieme dal Sasso di Malta.* Found after his Book came forth.

μ. 161. A single Vertebra, near an Inch in Height, and  $\frac{7}{10}$  of an Inch in Diameter, appearing to be of some Fish of the Dog-Fish Kind. *Ag. Scilla.* Found in *Calabria*, after his Book came out.

μ. 162. Another, less. *Ag. Scilla.* Tab. xviii. Fig. 2.

μ. 163. Another, different, much like the Vertebres of Fish of the Ray-Kind. *Ag. Scilla.* Tab. xviii. Fig. 4.

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\* "Turchesios Lapides, ex dicto Ebore factos veris, & naturalibus Turchinis Gemmis simillimos, atque in omnibus convenientes, Colore, Duritie, & Virtute præstantes."

μ. 164. Another, large: hollow'd, or having a considerable Cavity thorow the Middle of it. *Maryland.* Mr. *Vernon*.

μ. 165. Another, large, solid, and not hollow'd; sent from the same Place, by Mr. *Vernon*, with the Inscription, *Vertebra lumbaris ad cujus latus foramina vasculifera conspiciuntur*.

μ. 166. Another, by the same Person, and from the same Place.

μ. 180. Three Pieces of Bones. *Maryland.* Mr. *Vernon*. These are much like those dug out of *Harwich* Cliff, in the *English Catalogue*, n. 2, 3, & seqq.

μ. 200. A bony Body, in Shape flat, and round: smooth on one Side, and rugose on the other. 'Tis near 2 Inches and an half in Breadth: and  $\frac{3}{4}$  of an Inch in Height. 'Tis of a very porous Constitution. Sent from *Maryland*, by Mr. *Vernon*, with the Inscription, *Ictheosteon, patellarum in modum ad Pinna in suo loco retinendas & dirigendas, inserviens*.

μ. 201. Another like Body, but not half so big. From the same Place, and by the same Person.

#### *Bones and Teeth of Quadrupeds.*

v. 1. The Bone of the Foot of a Horse, commonly call'd *the Coffin-Bone*. Found bury'd with several other animal Substances in the Dutchy of *Wirtemberg*. M. *Valkenier*. This being apply'd to the Tongue, sticks to it; a Property very observable in several of the bony Bodies which have lain many Centuries in the Earth, from which indeed they derive that Property, and have it frequently to as high a degree, as *Solus Armena*, and some other like Earths.

v. 20. A Tooth of that Sort call'd, *the Fang-Teeth, Eye-Teeth*, or *Dentes Canini* of some Quadruped. It exactly resembles the Fang-Tooth of a Lion, which died in the Tower in 1684, now in the Custody of Mr. *Oldisworth*. It was dug up in the Dutchy of *Wirtemberg*, along with μ. 33. M. *Valkenier*. The Tip of this is broken off.

v. 25. A large Grinder appearing to be of a Horse, 3 Inches long, flattish, and above an Inch over. Sent by Dr. *Scheuchzer*, with the Inscription, *Unicornu fossile Dentis figura Canstadiensis. vid. Spleissium de Ossib. foss. Canstad. 4<sup>o</sup>. Scaph. 1701.*

v. 30. Two Teeth, half an Inch long, slender and inflected, appearing to be the Incisores or Fore-Teeth of some small Quadruped. Sent by Dr. *Kisner*, with the Inscription, *Dentes fossiles Canstadienses. Conf. v. 25. supra.*

#### *Corpora Marina praesertim Conchylium Massa Lapidea confertim immista.*

ξ. 1. A Mass of a hard brownish Stone, with the Shell of a Land-Snail in it, of the same Species with that γ. 121. This has several Fasciæ in it. Dug up near *Frankfort* on the *Main*, and sent by Dr. *Kisner*, with this Title, *Cochlea fossiles terrestres Zenis*

nis distincta, una cum alijs Testaceis integris & confractis, Massa lapidea immersa.

§. 2. Another Mass with two of the same Cochleæ in it, and other Shells. Found near Frankfort. Dr. Kifner.

§. 3. Another, appearing to be of still the same Species, in a whitish Stone, in which are several other small turbinated Shells. Sent by Dr. Kifner, with this Title, *Cochlea terrestres fossiles in lapide argillare cinereo ex Agro Moguntino.*

§. 4. A Mass composed of several turbinated Shells, each inclosed in an oval Crust. Sent by Dr. Kifner, with this Title, *Buccinacula candida in Massam friabilem congesta & Tartarea incrustatione veluti candifata. Ex Agro Moguntino.*

§. 5. Small Cochleæ very numerous, in a Mass of soft Stone. Sent by Dr. Kifner, with this Title, *Buccina aliaque testacea fossilia in Massam lapideam duram congesta, & Tartaro nigricante singula incrustata.* Found near Frankfort.

§. 6. Sent by Dr. Kifner, with this Title, *Buccinacula fossilia in unam Massam subflavam compacta, ex Agro Moguntino.* They are very numerous, the whole Mass being composed chiefly of them.

§. 7. *Buccinacula nivei coloris in lapide subflavo agri Moguntini.* D. Kifner.

§. 8. A Mass that has been very thick set with little flat Pectunculi, of which the Shells are now perish'd and gone, but the Places they took up, and the Impressions, appear every where very fair in the Stone. Found near Frankfort. Dr. Kifner.

§. 9. A Mass of very hard brown Stone, thick set with Pectunculi striati. From Basil. Dr. Scheuchzer.

§. 10. A Stone in which there have lain many very small Muscles. The Impressions remain very fair: but the Shells are perish'd. Found near Frankfort. Dr. Kifner.

§. 11. A stony Mass in which are lodged several Muscle-Shells. Sent by Dr. Kifner. Found near Frankfort.

§. 12. A small Scallop, with some other Shells, in a Mass of brown Stone. Found in a Field not far from the River Great-Chaplank, 24 Miles from Chesapeak-Bay in Maryland. Dr. Krieg.

§. 13. Several recurvirostrated Shells of the same Sort, with that N<sup>o</sup>. ----- lodg'd in a brown gritty Stone. From Schafhuse in Swisserland. Mr. Valkenier.

§. 14. A Mass of Stone of a dusky green Colour, with the Impression of a Pecten very fair upon it. The Shell is perish'd: but there is the Place or Cavity where it lay. This Cavity exhibits both the Shape and Bigness of the Shell with a very remarkable Exactness: and may pass for one of the very many Instances and Proofs we meet with, that these Impressions are all owing to Shells, and that the Bodies resembling them, which have been call'd by Naturalists, *Pectinitæ*, *Pectunculitæ*, &c. owe their Forms to *Pectines*, *Pectunculi*, &c. This Mass was sent by

Dr. Scheuchzer, with this Title, *Conchites striatus Chrysocolla lapidea immersus. Ex Suitensium Alpibus.*

§. 15. Four Shells appearing to be of the same Species, lodg'd in the very same Sort of Stone. *Ex Agro Tigurino. M. Valkenier.*

§. 16. Impressions on the Convex or Out-side of three of the same Sort of *Pectines*, very fair, in the same Sort of Stone, and from the same Place. *M. Valkenier.*

§. 17. A Mass of a hard whitish Stone, in which are two or three *Pectines*, and many of the *Concha Anomia*, some of them broken, so as to shew Spar concreted and crystalliz'd in the Cavities of them, which is very common in this and other Shells. *Ag. Scilla.* He calls these sparry Concretions in the Inside of the Shells, *Corpi di Pesce petrificati*, and shew'd them to his Antagonists for such, when they demanded of him why the Bodies should not be preserved as well as the Shells. From *Messina*. This he sent me for the Mass exhibited, *Tab. XIX. Fig. 2.* But if so, he took a little too much Liberty in his Icon, there being several Things in the Figure which are not in the Body. But indeed their ill Usage and Exasperations of him, and his Zeal for maintaining his Argument, disposed him to take that Liberty in several other Particulars.

§. 18. A Stone having in it the Tooth of a Shark, and the Spine of an Echinus. *Ag. Scilla*, sent for that delineated by him, *Tab. VI. Fig. 3.* But if it be, he has taken the same Liberty in this that he did in the foregoing. From *Malta*.

*Testa aliaque Animalium Marinorum partes, Incerti Generis.*

o. 1. A Body sent by Dr. Scheuchzer, under the Title of *Concha fossilis Tellinoides porosa.*

o. 2. Two Bodies, each about an Inch in Length, of a conical Figure, but somewhat inflected, set all over with Scales, placed in a Quincunx Order. *Ag. Scilla. Tab. XIII.* From the Hills near *Messina*.

o. 3. Two Bodies of a Discoid Form, convex on both Sides, being thicker in the Center, and lessening gradually till they terminate in an Edge quite round. They have crooked Lines rising from the Umbilicus on both Sides, tending to the Edge of the Body. They are about  $\frac{4}{10}$  of an Inch over. Sent by Dr. Scheuchzer, under this Title, *Lentes lapideae striatae utrinque convexae Lentibus vitreis [Conspicillorum] similes. Ex Altissimis Suitensium Montibus. Spec. Lithogr. Helv. p. 31. fig. 44.*

o. 4. Two others of the Bigness of the foregoing, and of the same Figure, except that they are convex only on one Side, being flat on the other, and on the Flat they have Circles within one another, from the Center to the Circumference. From the same Place. Dr. Scheuchzer. *Spec. Lithogr. Fig. 46, 47.*

o. 5.



o. 5. Five Masses of a dusky Grey-Stone in which are imers'd great Numbers of Bodies of the two Species before-mention'd, of several Sizes; some so small, that they are but just discernible, others near an Inch over. These are broken in such a manner, that the interiour Composition of them is clearly discover'd: and they appear to be made up of several Cases inclosing one another, and all of the same Shape with the outermost. What these very strange Bodies are, and to what Use they have served, is not easy to determine: I have not yet met with any thing in Nature like them. They are of a bony Substance: and if I may have the liberty to give my Conjecture, I should think them to be of those Bones that lie loose in the Heads of several Kinds of Fishes. There are in the same Stone some other broad and thin Bodies, which are of different Composition from those described, and seem to be made up of transverse Fibres. Sent by Dr. *Scheuchzer*, with this Inscription, *Lapis Frumentarius descriptus in Append. Miscell. Curios. Ann. 1697 & 1698. pag. 63. Conf. cum Lentibus lapideis striatis. Spec. Lithogr. p. 31. Fig. 42. & seqq. vid. ejusmodi Lapidis Iconem in Musaeo Calceolar. p. 317.*

o. 6. A yellowish Stone, in which are several of the Bodies before mentioned. *Ag. Scilla* from *Messina*. Found after his Book was publish'd.

o. 7. A Mass of Stone, of much the same Sort with that of o. 5. *supra*; and having several like Bodies in it. Among the rest, there is one large, near an Inch in Diameter, and flat on that Side that lies uppermost. 'Tis of an Ash-Colour: only there commences, in the Center of the Flat, a Line of a reddish Colour, striated a-crofs in such manner as to resemble a twisted Cord or Thread, and passing spirally in 10 Gyri to the Margin of the Body, which is near round. These spiral Twirles, bring the Body, commonly call'd *Umbilicus marinus*, into my mind; some of which have on one Side spiral or cochlear Gyres, tho' much more gross than these. That Body is only the Operculum of a Sort of Sea-Shell: and whether this may not have served for the same Use, must be left to future Enquiries, and more diligent Observations on the Productions of the Sea. There are apparently two Kinds of this Body: that which is convex on both Sides, of which there is some Description p. 234. o. 5. *supra*: and this which is plain or flat on one Side. Sent by Dr. *Scheuchzer*, with the Inscription, *Lentes lapideae. Specimen Lithogr. Helv. p. 30.*

o. 8. *Lentes lapideae, utrinque convexae, Massâ Lapidâ exempta. Ex altissimo Monte Aubrick. Dr. Scheuchzer. Conf. Specim. Lithogr. Helvet. p. 30.*

o. 9. *Lapis frumentalis, vel numismalis, ad Thermas Fabarias Comitatus Sarunetum. Conf. Specim. Lithogr. Helvet. p. ---*



*De Conchyliis Fossilibus aliqua Injuria affectis, quippe attritis, erosis, vel compressis.*

π. 1. The convex Valve of an Oyster-Shell; very crass, but much fulcated, perforated and corroded by Worms. Found in *Arabia Deserta*, between *Suez* and *Tor*, along with those δ. 35, 36. by Mr. *H. Worsley*.

The *Echini Ovarij*, ζ. 73, 74. 75, & 76, *supra*, appear to have been compress'd and broken by some external Agent.

π. 10. A Pair of the fulcated *Anomia*, with the Shells clapped close together in such manner, that they appear to have been compress'd by some external Force. *Neufchatel*. Dr. *Scheuchzer*.

*Fossilia Generum Incognitorum.*

ρ. 1. A Piece of a grey Stone, having the Surface thick set with little Pores or Cavities. Sent by Dr. *Scheuchzer*, under this Title, *Stigmites*. *Spec. Lithogr.* p. 13. *Fig.* 15.

ρ. 2. A Stone of a very strange Shape, branching at one end into two Parts. *Ag. Scilla*. From *Messina*. Found after his Book was out.

ρ. 3. A Flint much resembling the Body of a very large Beetle. Found near *Neufchatel*. M. *Valkenier*.

ρ. 4. Two Bodies of an oblong Shape, somewhat approaching to an Oval. Found in the Country of *Hess-Darmstadt*. M. *Valkenier*. We find the very same sort of Stones in the Quarries about *Oxford*. See Dr. *Plot's Natural History of Oxfordshire*, §. 148. *Tab.* vii. *Fig.* 10.





AN  
ADDITION  
TO THE  
CATALOGUE  
OF THE  
Foreign Native Fossils,  
In the COLLECTION of  
J. WOODWARD M. D.



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# P R E F A C E.

**T**IS now above six Years since I digested and put my Foreign Native Fossils into a Method; when I likewise drew up a Catalogue of them. Both were done with much Hurry and Precipitation: and only in the Intervals of my Business; but with all the Faithfulness, Care, and Exactness that was possible. There are my own Notes, Descriptions, and Observations, upon some of them; but, of the far greater Part, I had not Leisure to do more than only simply deliver, in their own Words, the Accounts that I receiv'd from those who sent or brought them. None of these are so particular and full as might have been wish'd; but the Place where each was found is assign'd: and of what Kind the Body is; tho', as to this upon Examination, I sometimes see Reason to differ from the Person who presented me the Body; as will appear from my classing these Fossils, and the Company that I range each amongst.

The Fossils in the following Catalogue are such as have come to my hands since those in the former were methodized and cast into Classes. I have now not more Leisure for these Impleys than I had then; so that I am constrain'd to take the same Course in the drawing up of this, that I did in that. Tho' my Affairs permit me hitherto to descend no further, yet, by even this Account, [what each Body is, and where 'twas found] the Use of them is secured: and they may have the Fortune to fall hereafter into the hands of those that may be so happy as to have more Time; and Incouragement to make further Observations, and draw up particular Accounts of each.



Directions for the composing of a Catalogue of Fossils. *Would my other Engagements permit that, I would put these, and those of the former Catalogue, together; casting them jointly into the same Method. I would also dispose all the Native Fossils of England, in my Collection, into another like Method. Then I would give the History of each, so far as my Knowledge or Information extended; with an Account where it was found: at what Depth: amongst what other Matter; in what Manner it lay: whether in a Fissure, or in a Stratum; with all other Circumstances of the Place. Next, I would note every Thing observable in the Body itself; its Colour; its Figure, Texture, or the Manner of the Concretion of the Parts; and the different sorts of Matter that concur and are united in the same Mass. Finally, I would bring each single Body to the Fire, to chymical Tryals, and all other Tests; in order thoroughly to discover its Nature, Constitution, Properties, and various Uses.*

The great Usefulness of such a Composure. *Was this once effectually done, and just Deductions and Inferences made from the whole, it would go a great way towards a Natural History of Fossils, and the perfecting this Knowledge; which tho' it hath lain hitherto so much in the dark, is, of all others, the most entertaining and useful. They who know the great Revenue that arises to this Kingdom from the Metals and Minerals in it; how considerable Discoveries have been made of late Years; and what Improvements of the Ways of Smelting and Refining of them; to pass by the Consideration of various other Fossils, of real Use and Value; will see of how great importance to the Publick these Studies are. What adds further to their advantage is, that they are not only pleasant, but, if the Compiler be accurate, they must be clear likewise, sure, and little liable to Error and Imposition. Mathematical Propositions are ordinarily abstracted; require great Extent of Thought, and Application of Mind. Whereas these Mineral Propositions are plain, simple, and obvious. The Relations of the Site and Circumstances of the Fossils in the Earth, and of the various Experiments made upon them, are no other than so many Histories of Fact. The Accounts of all Things observable in the Fossils themselves, will carry with them Evidence of Sense, which is the highest Certainty. These Fossils will be so many standing Monuments, that give perpetual Attestation to this; and there can need no other*

*Proof*

*Proof of those Accounts, than only a simple View of the Things set forth in the Catalogues. Nor, finally, can it be difficult to discern whether the Conclusions, drawn from those Relations, Experiments, and Accounts, follow rightly from them or not. I had begun an Essay of this Method in the Chapter of the Ludus Helmontij, in my Catalogue of the native Fossils of England; and intended another Sample of it in the History of my Lead-Ores: but Things of greater Pressure and Moment intervening, prevented and took me off from further Pursuit of it.*

Aug. 23. 1725.



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## Terra, & Terris Affinia.

α. 1. **A** Reddish Earth. *New-England.*

α. 2. "Clay of which we make Brick, found near *Maderas.*" [I observ'd. in all Parts of this, small Sea-shells in considerable Numbers. *J.W.*] *East-India.* Mr. Bulkley.

α. 3. "A sort of Clay or Ochre used to mark with. It grows "on the sides of some high Mountains." *East-India.* Mr. Bulkley.

α. 4. *Terra lutea, fusci Coloris, ex Monte rubro prope Elverfeldam.* Dr. Leopold.

α. 5. *Terra rubra Elverfeldensis.* Dr. Leopold.

α. 6. *Terra atrii Coloris. Ex Territorio Angelomontano.* Dr. Scheuchzer.

α. 7. This was sent for red Ochre; but 'tis rather a sort of Bole. *New-England.*

α. 8. *Bolus Colore Florem Persici referens.* S. Zanichelli.

α. 9. *Terra sive Bolus, ex Valdel Molin, Ditionis Veronensis.* Mr. Bourguet.

α. 10. The true *Terra Lemnia.* 'Tis of a reddish brown Colour, and in its native State; just as taken out of the Earth, without washing, or other preparation, being only form'd into a Bole, and the Judge's Seal set upon it; which is done upon the Place where it is digg'd. There's a great Solemnity once a year, upon a certain Holyday in *July*, used at the taking of it up. Dr. Picanini was present when this was taken up. This sort is very rare; and reserv'd chiefly for the Grand Signior. The Cups, out of which he drinks are made of it. The Pit is in a great Plain; the Stratum is horizontal; and about 4 Inches thick.

α. 11. *Terra Lemnia*, of a paler Complexion, being the common sort. The Stratum lies immediately under that of the former. Dr. Picanini.

α. 12. "*Sura Pasham* is used inwardly, after 5 Calcinations; and good to cool inward Inflammations. The Dose à gr. x ad "ʒi. *East-India.*" Mr. Bulkley.

α. 13. *Marga, seu Hepatitis; prope pagum Pfungen, Ditionis Tigurina.* Dr. Scheuchzer.

α. 14. "A sort of Ochre, that serves for marking, found at about 3 Foot depth. 'Tis a Bole. There is black Earth over it, "and hard white Clay under." *East-India.* Mr. Bulkley.

α. 15. Earth, grey, with a Cast of green; native, and just as taken out of the Pit, near *Cassa*, a principal City in the *Lesser Tary;*

tary; where 'tis found in great Quantity. The *Turks* and *Tartars* call it *Cassaca*; and make use of it in their Baths, it being smooth, unctuous, and detergent; and indeed one of the finest Fullers-Earth I ever saw. 'Tis *absorbent*, and adheres to the Tongue. Dr. *Piccanini* of *Rhetia*, brought it from the Place.

α. 16. Whitish Clay, used as Fullers-Earth, and found near the other, α. 14. *East-India*. Mr. *Bulkley*.

α. 17. Soap-Earth, found in great Quantity on the Land near the Banks of the River *Hermus*, in *Asia Minor*, about 7 Miles from *Smyrna*. 'Tis found on the Surface of the Earth, in form of that wont to be raised by Worms, every Morning. They sweep it up, boil it with Oil, and make Soap of it; which is the best in the world; and preferable to the *Castile*. There is a Tax upon it, which brings in a vast Revenue to the Grand Seignior. Mr. *Chishull*.

α. 18. A sort of Earth, found lying in Fissures of Rocks, in the Island of *St. Helena*, where 'tis call'd *Marrow of the Earth*.

α. 19. *Marga grisei Coloris, in Saxo arenario, Conchyliis minutis referta. Ex Saxo Lithopolis ad Rhenum.* Dr. *Scheuchzer*.

α. 20. "*Tella Sagrum*, is a sort of Clay found in Rivers, and " is used inwardly to dry, and absorb watery Humours; also good " in recent Coughs and Colds." *East-India*. Mr. *Bulkley*.

α. 21. Ochre, yellow. *New-England*.

α. 22. " Common red Earth. It serves here to mark with. " 'Tis found about 6 Foot deep; Sands lie above it, and Clay under it." *East-India*. Mr. *Bulkley*.

α. 23. *Ochra non usta Fragmenta, ex Monte Rammelio prope Goslarium.* Dr. *Leopold*.

α. 24. *Terra Martialis, ex Valle Clausshall, Ditionis Vriensis.* Dr. *Scheuchzer*.

α. 25. *Creta, effossa prope Unter-Schachen, Territorij Vriensis.* Dr. *Scheuchzer*.

α. 26. *Creta, ex Valle Unter-Schachen, Territorij Vriensis.* Dr. *Scheuchzer*.

α. 27. *Terra natans.* A pale-brown, light Earth. *New-England*.

α. 28. *Lac Luna, au dern Zigerback, Ditionis Abbatis Cellanorum.* Dr. *Scheuchzer*.

α. 29. *Lac Luna, è Crypta Kaverheimensi Solisbaro Palatina.* Dr. *Bayer*.

α. 30. *Gur album talcoides, ab Himmelsfursten, Saxonia.* Dr. *Henckel*.

α. 31. *Gur ferrugineum talcoides, a Zellerfelde, Hannoveria.* Dr. *Henckel*.

α. 32. *Terra viridis, Tyrol.* D. *Linck*.

α. 33. *Viride montanum Hungaricum, f. Cryfocolla.* From *Newsohl*, in Hungary. D. *Linck*. It appears to me to be a Preparation, and not in its native Condition.



## ARENÆ.

ε. 1. Sand, green; found on the Shores at one of the Ostia of the Nile, Egypt.

ε. 2. The common Sand, out of which the Dust-Gold is wash'd; Guiney. D. Chandos.

ε. 3. "A Sand, found on the Surface of the Ground." East-India. Mr. Bulkley.

ε. 4. Sand, black, glossy, and shining; appearing to be Blend, or Mock-Lead, reduced to this Form; taken up about 6 Miles from the Mouth of James River, in Virginia; whither it is forced up from Sea by the Freshes. There is also, amongst it, some small share of the common white Sand. Mr. Bembe.

## SAXA.

γ. 1. A talkey reddish Stone. "*Saustra Beady*. They calcine " it 100 times, being first prepared with Juices. This is also a "*Panacea*; and cures, as they say, 1000 Diseases. *Saustra* signifies a Thousand." East-India. Mr. Bulkley.

γ. 2. A talkey Stone of a dusky grey, with a Cast of green. *Nephriticus Lapis, ex monte septimo Rhetia*. Dr. Scheuchzer.

γ. 3. Ten Varieties of Emery from Smyrna. Mr. Baden. These Stones are of various Colours, and Constitutions; but have all talkey Micæ in them.

γ. 4. A Stone, greenish, and appearing to have been worn by the Motion of Water. Found, amongst many others of like sort, in the River Teglimento [*Ol. Timavus*] in Friuli. Monsieur Maximilian Milson.

γ. 5. Small white Stones, seeming to have been smooth'd and worn in like manner; found in great Numbers in a River near Salerno, in the Kingdom of Naples.

γ. 6. *Saxum lineis nigris striatum, de quo in Crystallographia*. Ex Gothardo Monte. Dr. Scheuchzer.

γ. 7. *Stigmita, vel Dendrita, ex Comitatus Badensis Terrifodinis*. Dr. Scheuchzer.

γ. 8. *Lapis fissilis Pyrite atramentario perfusus ac ferrugineo Colore tinctus; ad Radicem Montis Tittliaci, Ditionis Angelomontani*. Dr. Scheuchzer.

γ. 9. *Lapis fissilis niger, supra Thermas fabarias*. Dr. Scheuchzer.

γ. 10. *Lapides fissiles rubri, ex valle Engsolana, prope Fuzum Irth, Ditionis Bernensis*. Dr. Scheuchzer.

γ. 11. *Assa poory*, is a sort of Slate. The Powder is used in Fumigations for Children when they get Cold, &c. The Smell is very offensive. East-India. Mr. Bulkley.

## MARMORA.

δ. 1. *Marmor subflavum, Maculis sanguineis aspersum; ex Terrifodinis Comitatus Badensis*. Dr. Scheuchzer.

3. 2. Marble, the Ground blackish with a Cast of Green, having Spots, oblong, and some of them square, White with a Cast of Green. This is the *Ophites* of the Moderns: and probably of the Antients. At least *Pliny*\* reckons the *Ophites* with the *Green Marbles*, and says, 'tis like the Spots of Serpents; meaning that it has Spots like those of some Kinds of Serpents, from which it had its Name. He mentions two Kinds of it: the one white and soft, the other blackish and hard; the latter of which sort this seems to be of. He further observes that it was call'd likewise *Memphites*, from the Place in which 'twas found. *Memphis* was anciently a City of *Egypt*; and 'tis from that Country that this Marble, and the Works made of it, were ever fetch'd, particularly by the Romans of old. This Piece was found on the Shores of *Pozzuolo* in *Italy*, amongst other Fragments and Remains of ancient Work, by Mr. *Hugh Howard*.

3. 3. Granite, from Mount *St. Catherine*, a little to the South of Mount *Sinai*. All the Mountains from thence to the *Red-Sea*, consist of different sorts of Granite.

#### SILICES, CALCULI.

4. 1. *Lapis igniarius rubri Coloris, ex Schio Ditionis Vicentina*. Mr. *Bourguet*. This is of the Flint Kind, ruddy within, and cover'd with a white Crust outwardly.

4. 2. *Achates, ex Montibus Euganei*. This seems to be part of a Stratum of the same sort that is call'd in *England Chert*. See *The Catalogue of the English native Fossils*. *S. Zanichelli*.

4. 3. *Pyrites Siliceus, ex Monte Legerio*. Dr. *Scheuchzer*.

4. 4. A grey Flinty Pebble. From the Shore at the *Cabo de bona Esperanza*. Mr. *Wren*.

4. 5. A flinty Pebble, not different from some commonly found in *England*. Found near *Fort St. George, East-India*. Mr. *Bulkley*.

4. 6. Another. *Ibid*.

4. 7. *Silex Hammites, ex Birsa Fluvio, Agri Basiliensis*. Dr. *Scheuchzer*.

4. 8. A Part of a sparry Pebble, from *Fort St. George, East-India*. Mr. *Bulkley*.

4. 9. *Lapides pellucidi, Linsburgenses*. Dr. *Hugo*.

4. 10. Small Pebbles, diaphanous. *East-India*. These are of the same Hardness with the *English*. Mr. *Beavor, Jeweller*.

4. 11. *Chelidonium Mineralis, Rotsmund, Praefectura Sanensis, in Territorio Bernensi*. Dr. *Scheuchzer*

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\* L. 36. c. 7. Viride—Sic illud Serpentes maculis simile, unde & Nomen accepit.—Idem ejus Genera: molle candidum, nigricans durum. Vocatur & *Memphites* à loco.

## APPENDIX 1.

*Geodes, Osteocolla, Ætites, Bezoar-Minerales.*

- ε. 12. *Geodes*, from the Desert of Nitria, betwixt Alexandria and Grand Cairo Egypt. Dr. Sherard.  
 ε. 13. *Osteocolla Margâ medicata internè referta*, de Selbolde in Comitatu Henbourg.  
 ε. 14. *Osteocolla Selboldensis*. Dr. Kifner.  
 ε. 15. *Geodes, Ætites ex Valle Gleichenfi prope Gudensbergam Urbem in Hassia celebrem*. Dr. Kifner.  
 ε. 16. *Ætites Ericeti Luneburgenfis*. Dr. Hugo.  
 ε. 17. *Bezoar-Minerales fossile, ex Sicilia, Bocconis*. Mr. Bourguet.  
 ε. 18. *Bezoar Minerale P. Boccone, Recherches & Observ. Nat.* p. 227. & seq. Dr. Sherard.

## APPENDIX 2.

*Pisolithi.*

- ε. 19. *Pisolithus, ex Agro Ermeslebiensfi*. G. Frid. Milius.  
 ε. 20. *Pisolithus Carolinarum*. Dr. Henckell.

## APPENDIX 3.

*Pumex, Lapis Spongia.*

ε. 21. *Lapis externa specie Pumicem referens, talem scilicet qualem Montes Ignivomi ejaculare solent, Examini vero chymico subiectus longè aliam prodit Naturam. Integra Caules ex hisce Lapidibus conflata, in altissimis Hassia Montibus, & alibi passim, occurrunt; quos tamen nunquam arsisse pluribus iisq; certissimis Documentis facile evincitur. Fragmenta hoc Numero indicata, in Cummine Montis Hassiaci, Wintercasten appellati, à Petris decussa sunt.* Mich. Rheinoldus Rosinus, Munda-Saxo.

ε. 22. *Lapis Spongia vulgaris fossilis; ex Agro Bononiensfi*. Mr. Bourguet.

ε. 23. A light, porous, friable Body, suppos'd to be a Cinder of a blackish Colour. From Mount Vesuvius.

*Talcum squamosum, seu foliaceum. Mica.*

- ζ. 1. White foliaceous Talc, with white Spar. Guinea. D. Chandos.  
 ζ. 2. *Lapis talcosus, Bononiensis*. Mr. Bourguet.  
 ζ. 3. *Lapis calcarius subalbidus, cum admixto Selenitide; ex Monte calcario Luneburgenfi*. Dr. Leopold.  
 ζ. 4. *Talcosus Lapis candidus prope solium in Valle Pragallensfi, Rhatia*. Dr. Scheuchzer.  
 ζ. 5. *Mica Argentea, in Saxo albo; ex Sila Fluvio Ditionis Tigrina*. Dr. Scheuchzer.  
 ζ. 6. *Mica parva subviridis, in Saxo albo; ex Sila Torrente, Ditionis Tigrina*. Dr. Scheuchzer.

2. 7. "*Suaverna Gairecom*. The Powder boil'd with Butter, is taken to cure Leanneis of the Body." *East-India*. Mr. Bulkley.

2. 8. *Lapis Talcoides, Rhochlizensis*. G. Frid. Milius.

2. 9. *Mica varia*. Found near Fort St. George, *East-India*. Mr. Bulkley.

2. 10. "*Nella Corivendum*, is found by digging at the Foot or Bottom of Hills, about 500 Miles to the Southward of this Place. They use it, as Emery, to clean Arms. &c. It serves also to grind Rubies, by making it like hard Cement, by the help of Stick-Lac mix'd with it." *East-India*. Mr. Bulkley.

2. 11. Small Stones, reddish, having in them Sparks of a white shining Talc. There is a Mountain of these in the Country. *New-England*. These have been thus worn, and rounded, by the Water of the Deluge departing. That Mountain must be compiled after the manner of Gravel here in *England*. There were many of these Stones sent, all of near the Size of these.

2. 12. Mock-Lead, or black Talc, powder'd; from *Guinea*.

2. 13. *Creta nigra, ex Territorio Angelomontano*. Dr. Scheuchzer.

2. 14. *Granatorum Minera, ex Agro Bononiensi*. S. Monte.

2. 15. *Talci Minera, ex Melioboco*. Germanis der Brouken, vel Blocksberg. Dr. Kifner.

2. 16. *Lapides Lucidi Bononienses*. Mr. Bourguet.

2. 17. *Lapidis Bononia Fragmenta rarissima, ex Monte Padano*. Mr. Bourguet. These are striated; and so might be better rank'd amongst the fibrous Talcs.

#### *Selenites, Lapis specularis.*

2. 1. *Selenites Rhomboidalis Solito longior, ex Marga juxta Passy Villam non longe Parisiis*.

2. 2. "*Rauty Mummy*, or Stone-Mummy. It grows on the Tops of high Rocks. It is said to be caus'd by the Dews that fall upon the Stones. They powder and boil it in Milk, and then give it to stop Gonorrheas, Dose 9 fs. Morning and Evening." *East-India*. Mr. Bulkley. This is the Rhomboid Selenites.

2. 3. *Lapis specularis Jenensis*. G. Frid. Milius.

2. 4. *Lapis specularis Scandianensis*. Dr. Scheuchzer.

2. 5. *Mucoria* Glas; from *Russia*.

2. 6. "*Rauty Mudum*. Mix'd with Honey, 'tis good to cure Leanneis." *East India*. Mr. Bulkley.

#### *Talcum fibrosum. Amianthus.*

2. 1. *Spatum ex albo rubescens Jenense*. G. Frid. Milius.

2. 2. Striated Talc, from *Smyrna*.

2. 3. *Spathum Amiantho simile, ex Monte Legerio*. Dr. Scheuchzer.

2. 4. *Gypsi, vel Spathi Species, Mercurio sublimato j. milis, ex Agro Schaphusiensi*. Dr. Scheuchzer.

2. 5. "*Pashauna Beady*. The Powder prepar'd, by boiling in Milk is given inwardly for the Stone and Gravel, Dose 3 fs. twice a day, with equal Weight of Salt." *East-India*. Mr. Bulkley.



ø. 6. A coarse, grey, sparry Substance, of Constitution like that call'd ordinarily petrified Wood; from Tripoli, in Barbary.

ø. 7. A blackish stoney Substance, in Form of that commonly call'd petrified Wood. Sent from Tripoli, in Barbary, for Date-Tree petrified. Dr. Sherard.

ø. 8. *Asbestos, ex Hungaria.* Dr. Breynius.

ø. 9. *Asbestos, fodina Argentea Suhebergenfis, in Suecia.* Mr. John Angersten.

## LUDUS HELMONTII.

1. 1. *Ludus Helmontij, with ferruginous Septa. Hungary.* Dr. Ed. Brown.

## BELEMNITES.

κ. 1. *Belemnites, ex Agro circa Littgeren Comitatus Badensis.* Dr. Scheuchzer.

κ. 2. *Belemnites, f. Lapis Lyncis, ex Moscovia.* G. Frid. Milius.

κ. 3. *Belemnites cuspidatus. Ex Com. Badensi.* Dr. Scheuchzer.

κ. 4. *Belemnita rarissimi, Lineis spiralibus picti, Indolis Agathinae.* Seelfa, prope Hannoveram, ad Ripam Leyna. Dr. Hugo.

κ. 5. *Belemnita minores, calcarei, ejusdem Loci.* Dr. Hugo.

κ. 6. *Belemnita Litoris Balthici juxta Travæ Ostium.* D. a Melle.

## CORALLOIDEA.

λ. 1. *Porus Coralloides stellatus, juxta Parisios effossus.* Dr. Fussieu.

λ. 2. A Coralloid Astroites. Mr. Miller. From Virginia. Found with several Sea-Shells, in digging at a considerable Depth, near James-River, about 20 Miles from Sea.

λ. 3. *Millepora Fossilis, Agri Veronensis.* S. Zanichelli.

λ. 4. *Madrepora, ex Zopica Monte.* Mr. Bourguet.

λ. 5. *Mycetites, f. ut vulgo vocatur, Fungites Ceratoidaus. Fungita collecti sunt una cum affinibus, infra descriptis, λ 6. & λ. 9. Conchitis, Asteriisq; in Eissalia Ducatui Luxemburgico contermina, & ubivis montosa Regione; ubi, plurimis in locis. Argilla, Gylva, vel Carulea, omnes reconditi jacuerunt.* M. Rosinus Munda-Saxo.

λ. 6. *Fungites, alius, Conoides.* M. Rosinus.

λ. 7. *Caryophyllus, marinus, fossilis, parvus. Ex Sassuolo Ditionis Mutinensis.* M. Bourguet.

λ. 7<sup>x</sup>. *Mycetites minimus, striatus, cuneiformis.* à Chaumont. Dr. Fussieu.

λ. 8. *Mycetites Coralloides. Ex Agro Buxovillano.* Dr. Kifner.

λ. 9. *Fungus lapideus scutellaformis, excisis veluti striis quibusdam notabilis. Hi Fungi marini lapidei sunt, & plane incogniti. Reperiuntur simul cum Ostreoplectinitis, & aliis Conchylis. Sunt autem valde discrepantium Formarum, & Structura diversissima, rantaq; interdum Molis ut aliqui 50, 80, 100, imo 200 & 300 Libras facile pendere possunt. Quibus permixti interjacent etiam Astroites varij quos tamen nihil aliud quam memoratorum Fungorum quorundam Fragmenta esse, instituta Collatione compertum ha-*



*Geo. Mich. Rheinoldus Rosinus, Munda-Saxo.* He hath set forth an Account of these *Fossil Fungi*, or *Mycetites*, in his *Tentamen de Lithozois & Lithophytis subterraneis*, 4to. Hamb. 1716. where he wrongly imagines these to be of marine Origin, and brought from Sea, with the Shells, at the Deluge. Whereas these *Mycetites*, being stoney, must have been dissolv'd, as all Stones and stoney Coralloides were. See *Nat. Hist. Earth*, Part 2, and 4. Their being found along with Shells, which he urges as an Argument, no more proves that these, than it does the Flints, Pyritæ, and various other Bodies, undoubtedly of mineral Origin, came from Sea. He owns that there are none like these now found at Sea; and they are altogether unknown. See my Papers against Dr. Buttner's Notion in his *Rudera Diluvij Testes*.

λ. 10. *Fungites porosus Neostadiensis prope Hannoveram.* Dr. Hugo.

λ. 11. *Fungites minores Ficus aridas referentes, ejusdem Loc.* Dr. Hugo.

λ. 12. *Lapis constans ex Conis s. Cuneis se invicem amplectentibus. Ex Ripa Neostadiensi.* This Body I place in this Class, it seeming something to approach the Constitution of the Body call'd by some *Lithostrotion*, which I have rank'd among the Coralloids; perhaps not very rightly, I being not satisfied of the Origin or Constitution of either those Bodies, or these. Of these there is one found in Lancashire; in the *Catalogue of the extraneous English Fossils*, Class 13. q. 35. amongst the *Fossilia incognita*.

#### *Crystalli, Flores crystallini.*

μ. 1. *Crystallus Helvetica.* Dr. Scheuchzer.

μ. 2. *Crystallus diaphana, cujus Plana lateralia non sunt parallela, Pyramide exigua. Ex Alpihus Valesis.* Dr. Scheuchzer.

μ. 3. *Crystallus diaphana, rara, in qua Canaliculi quadranguli.* Dr. Scheuchzer.

μ. 4. *Crystallus fusca.* Dr. Scheuchzer.

μ. 5. *Crystallus micæ Chrysocolle aspersa.* Dr. Scheuchzer.

μ. 6. Crystal, a very large Sprig, join'd by several lesser. *Freyberg. G. Frid. Milius.*

μ. 7. Another Specimen, less. Out of the *Alps* of Switzerland. Dr. Scheuchzer.

μ. 8. A Sprig of Crystal, pretty clear, having about it several fine Amethysts, shot into Cubes. *Freyberg. Mr. Linck.*

μ. 9. A Cluster of crystalline Sprigs, very transparent, and beautiful, growing in various Postures. Out of the *Alps* of Eearn.

μ. 10. *Crystallus fuccineo Colore notata.* Dr. Scheuchzer.

μ. 11. Spar, very beautifully crystallized; out of the *Hartz-Mountain, Lunenberg. M. Valkenier.*

μ. 12. Spar, crystalliz'd very elegant. *Freyberg. Mr. Linck.*

μ. 13. Part of a large ferruginous Ball, hollow, the Inside thick set with hexangular sparry Crystals, [in manner of those found near *King's-Newton.*] From *Bombaim, East-India.* Mr. Stuart, Surgeon.

μ. 14.

μ. 14. *Fluor Lap. Calcario adnatus, in Monte Padano, Agri Bonon. S. Monte.*

μ. 15. *Fluor trigonus, descriptus in Specim. Lithogr. Helvet. Dr. Scheuchzer.* All the genuine Crystals, that are clear and transparent, are of an hexagonal Shape: as are also the genuine crystallized Spars, which consist of Crystal render'd, in some degree, opaque, by admixture of stoney Matter. Where Tale, or other mineral or metallic Matter, is united in the Mass, it changes the Form to Trigonal, Cubic, Rhomboid, &c.

*Crystalli Coloribus imbuti Gemmae.*

μ. 16. The Jargon, *Pegu.* This is little harder than Crystal. Mr. Beavor, the Queen's Jeweller.

μ. 17. Rock-Rubin, native, *Pegu.* All the three sorts of Rubin are found in *Pegu*; from which Country we generally have them. Mr. Beavor.

μ. 18. Balais-Rubin, native, *Pegu.* Mr. Beavor.

μ. 19. Spinel-Rubin, native, *Pegu.* Found in the Rivers. Mr. Beavor.

*Fluores simplices in Stratorum Saxeorum Fissuris concreti.*

μ. 20. A Piece of that sort of white Spar that breaks in Rhomboid Figures, and is commonly found in the Lead-Mines of the *Peak.* There are Samples of it in the Catalogue of the *English Native Fossils, f. 24, and f. 25.* 'Twas sent with the Title of *Selenita Rhomboidalis ex Monte Gimmor, Abbatis Cellanorum, descriptus in Specim. Lithogr. Helvet. Dr. Scheuchzer.* This is very different from the *Selenites Rhomb.* of Dr. Plot. *N. H. Oxfordshire.*

μ. 21. *Androdamas diaphanus, Selenites Rhomboidalis, Crystalliz adinstar pellucidus, ex altissimi Montis Gamor, Abbatis Cellanorum specu, de quo vide Specim. Lithogr. Helv. p. 52. Dr. Scheuchzer.*

μ. 22. *Androdamas vario situ concretus, ex specu Gamor Abbatis cellanor. Spec. Lithogr. Helvet. p. 53. Dr. Scheuchzer.*

μ. 23. A talky Spar, white, with a Cast of green; found near Fort St. George, *East-India.* Mr. Ed. Bulkley.

μ. 24. *Sunco Pully,* from *East-India,* sent by Mr. Ed. Bulkley, who, I believe, very wrongly takes it for a sort of *Arsenick.* 'Tis there given in Agues and Fevers. Mr. Ed. Bulkley.

μ. 25. *Spatum album, Saxonia.* Dr. Henckell.

μ. 26. *Spatum rubrum, Saxonia.* Dr. Henckell.

μ. 27. *Spatum speculare candidum ex Fodinis Clausthalensibus, in Hercyniis.* Dr. Leopold.

μ. 28. Spar, white, with a Cast of Purple; having in it small *Amethysts.* *New-England.*

μ. 29. *Lithophosphoros Sublensis, Fluoris purpurascantis Speciem indutus: Igni impetrus Tempore nocturno splendet.* G. Frid. Milius.

μ. 30. *Fluor mineralis, cujus Frustula Prunis candentibus inspersa in Tenebris pergrato Lumine refulgent. Ubi tamen Calor plus justo invaluit, cum Fragore in Partes minutissimas dissilire solent. Integra*  
hujus

*hujus Fluoris Vena extat, & ad Æris Mineram facilius fundendam auhibetur, Rothleberoda, Pago in Comitatu Stolbergico, ad Pedem Sylva Hercynia, &c. Mich. Rheinoldus Rosinus, Munda-Saxo.*

μ. 31. Spar out of the Hartz Mountain, Lunenburg. M. Valkenier.

*Lamina fluorea: Stalactita, Tubera, Flosculi, Incrustationes.*

μ. 32. A Sparry Incrustation. Sent with the Inscription *Tophus, ex Pago Rorbis, Ditionis Tigurinae.* Dr. Scheuchzer.

μ. 33. *Materia Stalactita, qua Saxa prope Scaturigines Thermarum Fabariensium incrustat.* Dr. Scheuchzer.

μ. 34. *Arabicus Lapis, Ebori similis Plinij. Ex Monte Legerio.* Dr. Scheuchzer.

μ. 35. A Sparry Incrustation, from the side of a Fissure of a stoney Stratum, sent with the Title of *Stalactita nivei Candoris, & Saxis prope Scaturigines Thermarum Fabariensium.* Dr. Scheuchzer.

μ. 36. *Tartarus ex Fonte Aponensi.* What he calls a *Tartarus*, is a Sparry Matter, brought forth by Water, cast on a Board, and gradually incrusted upon it. S. Zanichelli.

μ. 37. *Stalactites Carolinarum Carlsbader Tophus.* Dr. Henckell. This is nothing but an Incrustation of Spar, cast, successively, by the Water, on the sides of these Bathes.

μ. 38. *Quatri Vena, intra parietes Lapidis subcarulei, Lineis albis striati, prope Thermas Fabarias.* Dr. Scheuchzer.

μ. 39. *Tofus, ex Balneo Walterschwitano, Territorio Tugiensis.* Dr. Scheuchzer.

μ. 40. *Tofus, ex Balneo Faliscano, Rhatia.* Dr. Scheuchzer.

μ. 41. *Tessella Helvetica Lusoriis similes in Fluore albedo.* This Spar adheres to a Fissure of a Stratum of Stone. These Dice seem to be artificial, and put on. I broke the Mass in several Parts, but could find no Dice in the interior Substance of it.

μ. 42. *Stalactites ex Antro Baumanniano mirabili, in Hercynia.*

μ. 43. Sent as Part of a *Stalactites, ex Spelunca Baumannii.*

μ. 44. *Stalactites Seleniticus, ex Istria Dominii Venetorum.* M. Bourguet.

μ. 45. White Spar, out of the *Grotta Palotta, in Rome.* Mons. Maximilian Misson.

μ. 46. *Paula Gumda, found in Water-falls, and Canals.* The Powder given in Milk, is good for Gonorrhœas. East India. Mr. Bulkley.

μ. 47. A very remarkable Kind of *Osteocolla*; found in great plenty, on the Brow or Side of a hollow'd Way, at — in Tuscany, betwixt Pisa and Poggibonzi. Mons. Maximilian Misson.

μ. 48. Another Specimen, from the same Place.

μ. 49. White Sparry Efflorescencies, from a Sparry Plate. Sent with the Inscription, *Fluor albus floridus, ab Himmelforth, Styria. Flo. Ferri, Eisenbluth dictus, i. e. Iron-Blood.* Dr. Henckell.

μ. 50. An Efflorescent Talky Spar. *Ex Antro Nebel-loch. d. Agro Wirtemberg.* Dr. Kistner.

μ. 51. *Tophus*, vel *Tartarus*, ex ingenti *Lapidinâ veterum Romanorum*, in *Ditione Vicentina* in *Montis spelunca excavata*. Mr. *Bourguet*. This is an Efflorescent Spar, common in the Grotto's, and perpendicular Fissures of Stone, in *England*. See the Catalogue of the *English* native Fossils, CLASS VI.

μ. 52. *Herba Tartarizata*, ex *Flumine Velino prope Interamnâ*. S. *Zanichelli*.

μ. 53. *Folia Alni Tartarizata*, ex *Belunensi Ditione* S. *Zanichelli*.

μ. 54. Stone, from a Wall near *Philadelphia*, said to be made of Christians Bones, by the *Turks* at their taking the City. Dr. *Smith*, in one of his Epistles, mentions this Wall as an Instance of the *Turkish* Barbarity. What passes thus for Bone, is nothing but a loose soft porous Stone, form'd in an old Aquæduct, now in the Wall. Dr. *Sherard*. The Tradition of the present *Turks* is, that this Wall was built out of the Bones of the besieg'd by those *Turks* who first took *Philadelphia*. Sir *Paul Rycant's* History of the *Greek Churches*, CHAP. II. He takes the Bodies in this to be really Bones, cemented together. On which account he brought a Piece of it from thence. Whereas, in truth, it consists of various Bodies, chiefly Vegetables, incrust'd over and cemented together by Sparry and Stoney Matter brought out into Springs and Rivulets: and of such Incrustations, Sir *Paul* himself gives Instances in this very Chapter. Had he made due Observations upon those, he would have seen these were no other. There was a great Quantity of it sent me, from which I fram'd Judgment of it.

μ. 54<sup>x</sup>. A brown Sparry Incrustation, compos'd of various flat thin parallel Plates, much resembling the Incrustations of the Tea-Boylers of the Coffee-Houses of *London*, and probably form'd by the Sun's exhaling the Water, as those are by its being exhal'd by Fire. This was found incrust'd upon the Plaster of the *Piscina mirabilis* at *Baie*. Monf. *Maximilian Misson*.

*Fossilia Natura varia, n. qua constant imprimis ex Fluore Talceo, Materia autem minerali, & metallica admisto.*

μ. 55. Two Veins of brassy shining Marcasite in a white Spar, sent by the Name of *Spathum*. From *Clausthall*, by Dr. *Leopold*.

μ. 56. Spar, white, semipellucid, having on the Surface numerous Flores of a crystalliz'd shining brassy Marcasite. From the *Hartz Mines*, *Lunenburg*. Mr. *Valkenier*.

μ. 57. Spar, pretty diaphanous, shot into hexangular Crystals; with a pale brown Talc, and Flores of Marcasite, concreted upon it. From *Hartz-Mines* also.

μ. 58. Another Specimen, little different, only the Marcasite is in greater Quantity. From the same Mines.

μ. 59. Another, from the same Mines.

μ. 60. A semipellucid Column, compos'd of Shoots of Spar, of an irregular and uncommon Figure; with small Flores of Marcasite on one Part. *Freyburg*, Mr. *Linck*.



μ. 61. White Spar, the Surface form'd into small Plates, wedg'd together in a very various and observable Manner, holding much Lead. On the Surface are sprinkled small Sparks of a brassy shining Marcasite. *Clausthall, Hannover.*

μ. 62. Another Specimen; from the *Hartz-Mines.*

μ. 63. Another from the same Mines. This has besides, crystalliz'd Spar, and a pale brown talky Matter, incorporated with it.

μ. 64. Another. The Marcasite on the Surface of this is shot into small quadrangular Pyramids. From the same Mines.

μ. 65. From the same Mines. The sparry Plates are larger, and somewhat more transparent than any of the foregoing.

μ. 66. From the same Mines. The Plates of this are still more transparent.

μ. 67. The Plates of this are yet more transparent, and near crystalline. From the same Mines. There are small Flores of Marcasite likewise on the exterior Surfaces of the three last. These and the rest of the Spars from the *Hartz-Mines*, by their Weight, seem to hold Metal. 'Tis said to be Lead. I have not yet had leisure to make Tryal.

*Lapides Venarum metallicarum, fluoreo-Talcei.*

μ. 68. *Blende Germanicè, Minera Speciem quidem sed nullum Valorem habet. Ex Fodinis Clausthalensibus.*

μ. 69. *Sterile nigrum in Fodinis Plumbi, Blende. Saxonia. Dr. Henckell.*

μ. 70. *Sterile nigrum; ex Stanni Fodinis. Dr. Henckell.*

μ. 71. *Genus Montanum Suecicum, Sod Slag appellatum; quod invenitur in Argenti Fodina, Sulbergæ. Mr. Angerslen.*

BITUMINOSA.

v. 1. *Bitumen fossile coagulatum, quod invenitur in Ferrifodina Beterberg, in Suecia. Mr. John Angerstein.*

v. 2. Coal, light, but fine as Canell, brought, by an Indian, out of the inner Parts of the Country. *New England.*

v. 3. *Lithanthracis Species, nostratibus Stein-Gallen dicta, mediis Saxi eruta; ex Præfectura Vallis Rhenana. Dr. Scheuchzer.*

v. 4. *Lithanthrax, s. Carbo fossilis Helſingburgo-Scanicus. Dr. Leopold.*

v. 5. *Lithanthrax, ex Valle Engſſland, Ditionis Bernensis. Dr. Scheuchzer.*

SALES.

ξ. 1. *Nitrum nativum Sancto-Mauritianum Rhetia. Dr. Scheuchzer.*

ξ. 2. *Vitriolum Hassiacum. Dr. Leopold.*

ξ. 3. *Vitrioli Vena, ex Alpibus Suitensibus. Dr. Scheuchzer.*

ξ. 4. *Vitriolum Martis, ex Fodina Fahlunensi Suecia. Dr. Leopold.*

ξ. 5. *Vitriolum viride Goslaricse. Dr. Leopold.*



ξ. 6. *Lapis Atramenti ruber, vel Minera Vitrioli, ex Fodinis Goslariensibus.* Dr. Kifner.

ξ. 7. *Vitriolum album nativum Schemnicense, Hungaricum.* Dr. Leopold.

ξ. 8. *Misy flavum ex Fodinis Goslariensibus.* Dr. Kifner.

ξ. 9. *Farina Aluminis, Dibana.* Dr. Leopold.

ξ. 10. *Alumen candidum, nativum, Dibanum.* Dr. Leopold.

ξ. 11. *Terra aluminosa, cruda, Dibana.* Dr. Leopold.

ξ. 12. *Lapis Scissilis niger Eliaridensis, Scanicus, ex quo Lixivium Aluminis coquitur.* Dr. Leopold.

ξ. 13. *Lapis Eliaridensis, Scanicus, primâ vice calcinatus.* Dr. Leopold.

ξ. 14. *Lapis Oris Eliaridensis Scanicus, secundâ vice calcinatus.* Dr. Leopold.

ξ. 15. *Fissiles Lapides pregnantes Sale, Boracis amulo, ex Territorio Angelo-Montano.* V. Scheuchzeri  $\pi\pi\sigma\iota\Phi$ . Helvet.

#### SULPHUR.

o. 1. *Lapis gryseus, viridi passim tinctus, qui circa Mineram sulphuris reperitur. Ex Fodinis Clausthalensibus.* Germanis Berg dicitur. Dr. Kifner.

o. 2. A Mineral, yielding Sulphur, brought by an Indian from the Inland Parts of the Country. New-England.

o. 3. *Sulphuris Minera, cum Gypso. Ex Agro Forlivenfi.* Signior Fof. Monte.

o. 4. *Sulphur cum Lapide speculari quod rarum est. Ex Scandianensibus Collibus, Ditionis Mutinensis.* M. Bourguet.

o. 5. *Sulphur nativum stalacticum.* Smyrna.

#### ARSENICUM.

o. 6. Native yellow Arsenick, *Auripigmentum.* Smyrna.

o. 7. *Taulacum*, a sort of Arsenick, yellow, with Specks of red; which, after many tedious and difficult Preparations, is given inwardly: and esteem'd a Panacea. They say that Gold may be extracted out of it. *East-India.* Mr. Bulkley.

o. 8. *Ranty Pundoe*, a sort of Arsenick; being well prepared, 'tis given in Coughs and Colds. 'Tis found on the Tops of high Hills. *East-India.* Mr. Bulkley.

o. 9. *Puckaun Beady*, is a sort of Arsenick, found by Riversides; and, after many troublesome Preparations, is used in the Diabetes. *East-India.* Mr. Bulkley.

o. 10. This seems to be red Arsenick. From *China.* Mr. Oliphant. He says it is taken forth of the Copper-Mines. They call it *Hingwang*, and use it in Medicine: as likewise in Painting. Alone it makes an Orange-Colour; incorporated with Cerufs, more or less, a Lemon-Colour, and various Yellows. There seems to be Cinnabar in it.

#### CINNABARIS.

o. 11. *Cinnabaris, a St. Ico, Normandia.* Præbet Mercurij Partem decimam, Sulphuris tertiam.

o. 12.

o. 12. Native Cinnabar. *Hungary*. M. Sam. Robeseri.

o. 13. Cinnabar. *China*. Mr. Oliphant.

# PYRITES.

π. 1. *Pyrites*.... *India Orientalis*. *Argyradamas* Plinij. This is orbicular, striated from the Surface to the Center; and not different from those commonly found in England.

π. 2. *Pyrita ærens*, ad *Oppidum Leun*, *Comitatus Solmenfis*. Dr. Kifner.

π. 3. *Orchites*, *Formæ curiosa*. Ex *Bononia Monte*. Signior Jof. Monte.

π. 4. *Pyrites rotundus angulatus*. *Præfectura Ertzen prope Pymont*. Dr. Hugo.

π. 5. A *Pyrites*, of a globose Figure, seeming to be composed wholly of many cubick *Pyritæ*, very distinct and fair. Sent with the Inscription, *Minera Argentum continens, globosa*. Ex *Margisodinis, prope Erzam Ducatus Carlewbbergenfis*.

π. 6. *Pyrites ex Margæ-Fodinis Principatus Waldercensis, haud procul a Pymont, ubi in magna Copia reperiuntur*. Vulgo *Mergelnuos, i. e. Nux margarum*. This is of Constitution much like the precedent.

π. 7. *Pyrita cubici elegantissimi, ex Torrente Nolla, in Valle Domestica, Rhetia*. Dr. Scheuchzer.

π. 8. *Pyrita cubicus ex Fontibus Rhani posterioris, in Rhetia*. Dr. Scheuchzer.

π. 9. *Pyrita tessellati, s. Ludus Paracelsi, ita dictus è Ludo Tesserarum*. Found in stoney Soil near *Sen Hora da Lappa* in the Province of *Tras os Montes* in Portugal.

π. 10. Cubic *Pyritæ*, *Malabar, East-India*.

π. 11. Two large Cubic *Pyritæ*, of a blackish Colour, found in a Mountain not far from *Sakia* in that part of South-East *Tartary* call'd by the Natives *Thibet* or *Butant*. The Metropolis of this Country they call *Lhassa*. Brought thence by *Paare Felix* a Capuchin Fryar, who was a Missionary in those Parts 1724.

π. 12. Several less, in a Cluster, or concreted in one Mass. Out of a Mountain near *Kiazé*, in the Province of *Hupak*, in the Kingdom of *Great Thibet*. By the same.

π. 13. A Cubic *Pyrites*. *Newfoundland*.

π. 13<sup>k</sup>. Bodies of various Figures. angular, and crystalliz'd, of the Bigness of large Peas, black, glossy, talkey, and much of the same Constitution with Blende. But, some of them put into the Fire, emitting a sulphurous Smell, I chose to rank them with the *Pyritæ*. I had the following Account with them. "*Wicran-*  
"*tum*, found in the Diamond-Mines. They first powder it, and  
" then mix it with the Juice of divers Plants, then dry it and  
" calcine it; and this they repeat sixty times: but the first Calci-  
" nations are made with a Mixture of divers Urines, viz. Human,  
" with that of an Elephant, Horse, Camel, Ass, Goat, &c. and,  
" after

“ after that, with the Juices. ’Tis good in Coughs, and Consumptions.” *East-India*, Mr. *Bulkley*. At the first view, I imagined they held Tin; they something resembling the Tin-Grains. Of what Constitution they are, must be determined by trial.

#### MARCASITA.

π. 14. *Marcasita*, *J. Georgenstadt*, ex quo Sulphur & Vitriolum. Dr. *Henckell*.

π. 15. *Marcasita cum Quarzo*. Ex *Fodina Chalybis Comitatus Sarunetum*. Dr. *Scheuchzer*.

π. 16. A *Marcasitic Incrustation*. *Hartz, Lunenburg. M. Valkenier*.

π. 17. *Marcasita Sulphureus*. *Freybergensis*. Dr. *Leopold*.

π. 18. A *Marcasite* with Spar incorporated with it. *Hartz, Lunenburg, M. Valkenier*.

π. 19. A *Marcasite*, from *Smyrna*.

π. 20. *Marcasita*, *gemaner Kiefs*, i. e. common Ore, ex quo conficitur Sulphur & Vitriolum. Dr. *Henckell*.

π. 21. *Marcasita albus Arsenicalis*. *Weisser Kiefs*, or *Gist Kiefs*, i. e. white Ore, or poisonous Ore, *Fodinis Stanni & Cobalti*. Dr. *Henckell*.

#### COBALTUM.

π. 22. *Minera Cobalti ex qua Smalta preparata, cum Floribus ejus coloris Florum Persicorum*. Ex *Saxonia prope Schneeberg*.

π. 23. *Cobaltum*, ex quo *Caruleum facilius preparatur*. Ex *Fodinis Schneebergensibus, in Miskia*. Dr. *Leopold*.

π. 24. *Cobaltum Freybergensium, minoris Ordinis*. Dr. *Henckell*.

π. 25. *Cobaltum Schneebergensium, Blauerben*, i. e. blue-colour’d Cobalt. Dr. *Henckell*.

#### ANTIMONIUM.

π. 26. *Antimonij Minera, ex Insula Ilva*. M. *Bourguet*. This has Sulphur upon it, much after the manner of that of *Cornwall*.

π. 27. Native Antimony, cover’d with a brownish Crust, after the manner of that of *Cornwall*. Mr. *Sam. Robeseri*. This is from *Hungary*.

π. 28. *Vena Antimonij, ex Valle Sexaminna, Rhetia*. Dr. *Scheuchzer*.

π. 29. *Alumen Plumosum, cum Minera Argenti & Plumbi intermixtum*. Invenitur in *Fodina Sahlberga, Suecia*. Mr. *John Angersten*.

#### CALAMINARIS.

π. 30. *Lapis Calaminaris, Boiemorum, Galmeij*. Dr. *Henckell*.

#### NIGRICA FABRILIS.

π. 31. Black-Lead, *Nigrica fabrilis*, found at the Surface, he thinks in great quantity, on the high Hill of *Gibraltar*. Mr. *Warren*.

π. 32. A sparry Body, cover'd over with a Crust of Black-Lead, in the manner that the Antimony of Cornwall is crusted over with Sulphur. See the Catalogue of the additional English native Fossils, g. 12. This yields a fifth part Silver. *New-England.*

π. 33. *Plumbago, ab Altenburgia, ex Minis Stanni.* Dr. Henckell. This is Wad, or Black-Lead, with White-Spar.

#### ARGENTI MINERA,

*Seu potius Plumbi in se Argentum continentis.*

ρ. 1. Silver-Ore, with common, shining, brassy Marcasite, and white Spar. *Potosi, Peru.*

ρ. 2. Silver-Ore, with white Spar, and Sparks seeming to be of Lead-Ore. *Potosi.*

ρ. 3. *Minera Argenti alba, dives cum Pyrita, ab Himmelsfursten in Saxonia, continens 6 ad 10 Marcas Argenti.* Dr. Henckell.

ρ. 4. *Minera Argenti ditissima, cujus lbj. continet 3 xij. Argenti purissimi. Hercynia. Ex Fodina Sainson dicta.* Dr. Hugo. It has brassy shining Marcasite, and white Spar, incorporated with the Lead-Ore.

ρ. 5. *Minera Argenti ditissima, cujus lbj. continet 3 x. Argenti purissimi. Hercynia. Ex Fodina dicta St. Jacobi. Andreosberg.* Dr. Hugo. This has incorporated with it a red Spar, much like that of the *Rotgulden Ertz.*

#### PLUMBI MINERA.

σ. 1. *Plumbum statu suo. Terra Metallica flava circumductum, de Tarnowitz ex Polonia.* This nearly approaches a native or virgin Metal. The small Quantity of white Mineral with it, somewhat resembles *Saccharum Saturni*: and is doubtless a white Lead-Ore of the same sort with the English.

σ. 2. *Vena Saturni tessellata, ex Fodinis Hartzigerodanis in Duc. Anhaltino.* Dr. Leopold. This is of the finest Blue or Pottern-Ore. He calls it *tessellated*, not as shot into *Tessellæ*, or Cubes, as some Lead-Ore does, but as breaking in Squares, which this sort of Ore, when clean, as this is, commonly does.

σ. 3. *Minera Argenti & Plumbi in Fodina Suhlberga, Suecia.* Mr. Angerssen.

σ. 4. *Minera Plumbi, ex Fodina Gratia Dei Clausthalensi.* Dr. Leopold.

σ. 5. Lead-Ore, Pottern, from a Fissure of a Rock at the Day, about 60 Miles North-East from Boston, up in the Country, in *New-England.* Captain Crowe.

σ. 6. *Molybdena grossior grober bleyglantz, i.e. Coarse Lead, shining, hic ubi vis obvia, continens 60 Libras Plumbi & 1, 2, 3. Lotos Argenti. Saxonia.* Dr. Henckell.

σ. 7. *Minera Plumbicum Marcasita, ex Fodinis Clausthalensibus.* Dr. Leopold.

σ. 8.

- σ. 8. *Minera Saturni rudis, dives, cui Minera Cupri intermixta, ex Hercynia. Continet etiam aliquid Argenti.* Dr. Hugo.
- σ. 9. Lead-Ore, rich. *New-England.* This is exactly like the common Lead-Ore of Mendip. See the Catalogue of the English native Fossils, Class XI. Part 3. n. 28. & seq.
- σ. 10. Lead-Ore, glossy, and shining; from Cornelius Munster, about five Leagues from Aix la Chapelle.
- σ. 11. *Vena Plumbi, & Argenti, prope Biberwier, Comitatus Erenberg, in Tirolensi.* Dr. Scheuchzer.
- σ. 12. *Minera Saturni cubica cui Crystallus intermixta supra Marmore Metallico subviridi, de Bleystadt, prope Joachimsthal, in Bohemia.*
- σ. 13. *Minera Plumbi cubica Quartzo albo innata, cui & cupri nonnihil commixtum; de Annaberg, in Saxonia.*
- σ. 14. *Minera Plumbi & Argenti, ex Fodina Suhlberga, in Suecia.* Mr. Angersten. This nearly approaches the English steel-grain'd Lead-Ore.
- σ. 15. Steel-grain'd Lead-Ore, from the Silver-Mine at Freyberg, Saxony, five hundred Foot deep. Dr. Arnold of Exeter. There is white Spar with it.
- σ. 16. *Molybdena, Granis minutioribus. Saxonia.* Dr. Henckell.
- σ. 17. *Vena Plumbi, in Tova, Rhetia.* Dr. Scheuchzer.
- σ. 18. *Minera Argentea & Saturnea, ex Argenti Fodina. Suhlberg, in Suecia.* Mr. Angersten.
- σ. 19. Lead-Ore, incorporated with white Spar; yielding also Silver. Brought by the Name of Silver-Ore, from Clausthal, 12 Leagues from Hanover. Lord Hertford.
- σ. 20. *Vena Plumbi & Argenti dives, ex Rhetia.* Dr. Scheuchzer.
- σ. 21. *Vena Plumbi dives, ex Fodina Hartzigerodana, in Ducatu Anhaltino.* Dr. Leopold.
- σ. 22. *Minera Plumbi dives, ex Fodinis Sahlbergensibus, haud procul Upsalia, Suecia.* Dr. Leopold.
- σ. 23. *Minera Plumbi ex Fodina Eleonora & Ludovica, Clausthalensi.* Dr. Leopold.
- σ. 24. *Minera Plumbi, cum Galena & Chrysocolle, in Marmore sordide albicante, ex Fodina Spes Metallifossoris dicta, que est Rhotia, in Landgraviatu Hassiaco Darmstadiensis.* Dr. Leopold.
- σ. 25. *Vena Plumbi. ravior, Rhetica.* Dr. Scheuchzer.
- σ. 26. *Minera Plumbi viridis, perrara, pura puta fere Plumbum; ab Zschopau, Saxonia.* Dr. Henckell.
- σ. 27. A brown talky Lead-Ore, from the Black-Sea. 'Twill not be brought to run into Shot by any means. Dr. Sherard.
- σ. 28. *Minera Plumbi alba, Weiss bley Ertz; i. e. white Lead-Ore. Saxonia.* There is of this sort in England. See the Catalogue of the additional native English Fossils, l. 13. & seq.

## STANNI MINERA.

- τ. 1. Tin-Grains. *Minera Stanni ditissima Zuingra'upe, a Schlackenwalde, in Bohemia.* Dr. Henckell.



τ. 2. *Minera Stanni, Mariembergensis. G. Frid. Milius. Tin*  
Grains, very fine.

τ. 3. Fragments of Tin-Ore, rounded, smooth'd, and reduced  
to the Form of Pebbles, probably by the Motion of Water. *Minera*  
*Stanni fluvialis, à Seiffen. Dr. Henckell.*

τ. 4. *Minera Stanni rubra, dives, ex Altenberga, Saxonia.*

### CUPRI MINERA.

υ. 1. *Cuprum nativum, seu potius precipitatum, ex Fodina Schilou*  
*Duchatus Vestmannia, apud Suecos. Being beat with an Hammer,*  
some Parts of it discover a Toughness near a Malleability. *Mr. John*  
*Angersten.*

υ. 2. *Minera specialis Cuprea, in Fodina Schilou, Ducatus Vest-*  
*mannia, in Suecia. Mr. John Angersten.*

υ. 3. *Minera Veneris ditissima, ex Fodina Linsnadahlen, Provincia*  
*Herdahlen, in Suecia. Mr. John Angersten.*

υ. 4. Copper-Ore, with white Spar. *Scroton, near Wallinford,*  
*New-York.*

υ. 5. Out of the same Vein with the precedent.

υ. 6. Copper-Ore. This yields about  $\frac{2}{7}$ . *Connecticut Colony, New-*  
*England.*

υ. 7. *Vena Cupri, in Marmore luteo, (Spaat) cum adharente Ca-*  
*rroleo, ex Fodinis Heimburgensibus, Comitatus Nassovici, prope Ur-*  
*bem Embs. Dr. Leopold.*

υ. 8. *Vena Cupri, Argenti quoque ferax, ex Fodina Guttenbergica,*  
*in Bohemia. Dr. Leopold.*

υ. 9. A poor Copper-Ore, sparry, grey, with part green. *Sax-*  
*um, Chrysocolla perfusum, Venæ Argenti Index. Ex Rhetia. Dr.*  
*Scheuchzer.*

υ. 10. A brassy shining Copper-Ore, found at *Seraakioi, on the*  
*Bosphorus on Europa Side. Dr. Sherard.*

υ. 11. *Minera Cupri Sublensis, Thuringia. G. Frid. Milius.*

υ. 12. *Cupri Minera, prope Sublam, in Thuringia. Dr. Kifner.*

υ. 13. *Minera Cupri, ex Fodina Yarpenbergensi, in Suecia. Mr.*  
*John Angersten.*

υ. 14. *Minera Cupri, dives, ex Fodina Fahlunensis in Gestricia, Sue-*  
*cia. Vocatur alias illa Fodina magna Cupri Fodina Montanorum.*  
*Mr. John Angersten.*

υ. 15. *Vena Cupri dives. Ex Valle Palenza. Dr. Scheuchzer.*

υ. 16. *Minera Cupri ex Fodinis Costricensibus prope Geram, quæ*  
*Voightlandiæ Oppidum est. Dr. Leopold.*

υ. 17. *Minera Cupri Ochra infecta, ex Fodina Clausthalensi.*

υ. 18. *Minera Cupri, in Marmore candido, (Spaat) ex Fodina*  
*Clausthalensi. Dr. Leopold.*

υ. 19. *Vena Cupri, diversi-color. Ex Fodina Clausthalensi. Dr.*  
*Leopold.*

## FERRI MINERA.

- Φ. 1. *Minera Ferri dives, f. Hamatites. Eybenstock, in Saxonia.*
- Φ. 2. *Hamatites, found in a River near Mount Sinai. Dr. Sheppard.*
- Φ. 2. *Ferri Minera ex insula Ilva. Signior Jof. Monte. Part of this Vein consists of Chips, or thin Plates, after the manner of one sort of talky Spar. On one side of the Mass is a Grain of a brassy shining Marcasite.*
- Φ. 4. *Minera Ferri ditissima, Fodinarum Beturbergarum, in Suecia. Mr. Angersten.*
- Φ. 5. *Ferri Minera Norvegica prope Urbem Arandale, cujus Portus appellatur Mardoë. à D. Jac. a Melle.*
- Φ. 6. *Minera Ferri, è Fodina Beterberg, in Suecia. Mr. John Angersten.*
- Φ. 7. *Minera Ferri, à Clausthall. Dr. Kifner.*
- Φ. 8. *Minera Ferri ditissima, Fodinarum Beturbergarum, in Suecia. Mr. John Angersten.*
- Φ. 9. *Minera Ferri Fodinarum Dannemarensium in Ducatu Upplandia, Suecia Regni. Mr. Angersten.*
- Φ. 10. *Minera Martis optima Sahlbergensis, Suecia. Dr. Leopold.*
- Φ. 11. *Ferri Minera Suhлана, ex Fodina dicta Reventhal. Dr. Kifner.*
- Φ. 12. *Ferri Minera Suhлана, ex Fodina dicta Friderick. Dr. Kifner.*
- Φ. 13. *Innamoo chasha Roy, i.e. Iron-Stone. They get Iron out of it; though there are other sorts that afford more. This sort is us'd in Phylick. East-India. Mr. E. Bulkley.*
- Φ. 14. *Vena Chalybis, Schwartzertz dicta, ex Comitatu Badensi. Dr. Scheuchzer.*
- Φ. 15. *Vena Chalybis, Meliwerk dicta, ex Comitatu Sarunetum. Dr. Scheuchzer.*
- Φ. 16. *Vena Chalybis, Meliwerk dicta, ex Comitatu Sarunetum. Dr. Scheuchzer.*
- Φ. 17. *Vena Chalybis infima, Roth-Ert dicta, ex Comitatu Sarunetum. Dr. Scheuchzer.*
- Φ. 18. *Vena Ferri, ex Alpe Guppen, Ditionis Glareonensium. Dr. Scheuchzer.*
- Φ. 19. *Minera Ferri Conchis onusta, ab Heidenheim, Wirtembergia. Dr. Kifner.*
- Φ. 20. *Vena Ferri ex Hammite constans, ex Monte Baumgarten, Territorij Bernensis. Dr. Scheuchzer.*
- Φ. 21. *Minera Martis fertilior, ex Fodinis Lunschitensibus, in Saverlandia. Dr. Leopold.*
- Φ. 22. *Minera Ferri ditissima, ex Cryptis Elbingerode. Hercynia.*
- Φ. 23. *Minera Martis porosa, ex Fodinis Oppidi Lunschitt, in Saverlandia, in Duc. Montano. Dr. Leopold.*
- Φ. 24. *Vena Chalybis genuina, Rother-Ertz dicta, ex Comitatu Sarunetum. Dr. Scheuchzer.*
- Φ. 25. *Vena Ferri figurata, Suhlenfis, Hennebergica. Dr. Leopold.*

Φ. 26. Iron-Ore. New-England.

Φ. 27. *Vena Ferri globosa, & pisiformis, ex Comitatu Badensi.* Dr. Scheuchzer.

Φ. 28. *Vena Ferri Pisiformis, ex Territorio Schaphusano.* Dr. Scheuchzer.

Φ. 29. A fort of Iron-Stone, found in a shallow River. East-India. Mr. Bulkley.

Φ. 30. *Saxum Ferri Mineram in se continens, cum varij Generis Conchyliis. Ex Ripa Neostadiensi.* See another like Specimen of various and numerous Shells in Iron-Stone, from Hesse-Castle, in the Catalogue of the additional foreign extraneous Fossils, v. 4.

### DENDRITÆ f.

#### *Delineationes Arbustorum Minerales.*

κ. 1. *Dendrites flavus ex Diocesi Eysletensi.* Dr. Bayer. *Hujus, Tabula eruuntur multæ: & hæc quoque longe ampliores. Confer. Scheuchzeri Herbar. Diluv. Tab. VI.*

κ. 2. *Pietra emboscata*, the Florentine Marble, taken out of the Quarry, about four Miles from Florence, by Dr. Picanini. 'Tis found in thin Strata, and is full of Cracks. In these is commonly found a black mineral Matter; which ordinarily has insinuated itself into the Substance of the Stone, so far as it was stat-ter'd, on each side the Crack, exhibiting various Delineations; but chiefly, as fuliginous Steams are wont, in Form of Shrubs. They penetrate the Substance of the Stone: and appear, near the Crack, where-ever the Stone is cut. Much of the Stone in this Quarry, and indeed of the Country round, is of this sort. There is, in the same Quarry, likewise another sort of Stone, somewhat yellower, having in it Delineations of Towers, Castles, and Buildings.

κ. 3. Another Sample of the same sort of Stone, cut and polish'd. Out of the same Quarry.

κ. 4. *Dendrites. Repertus non procul ab Urbe Ratisbonensi, media in Via quâ Ingolstadtum tenditur; ubi Lapis hisce signaturis notatus, est valde copiosus.* D. Ant. Picanini.

#### *Ejecta ex Montibus ignivomis.*

↓. 1. A vitrify'd Substance, variegated with dusky and green, flung forth of *Vesuvius*. Mr. Bernbde was present when it was flung forth. It fell upon his Hat.

↓. 2. A black heavy Sand: a light Substance, friable, somewhat like a Scoria, black within, of a pale brown without, and a yellow sulphurous Substance. Cast out of the new Island near *Santorini*. Dr. Sberard.

#### *Fossilia Artis ope redacta.*

ω. 1. A Regulus, from the first running of the *Potosi* Silver-Ore, γ. 1. *supra*.

ω. 2.

ω. 2. *Recrementum Metallicum*, s. *Pars fundi fornacis in quo Plumbum liquefactum est. Clausthalij, in Hercyniis. Dr. Leopold.*

ω. 3. *Scoria Chalybis Sarunetana. Dr. Scheuchzer.*

ω. 4. *Cadmia Fornacum, Ofenbruch; i. e. Ovenbreak, Saxonie. Dr. Henckell.*

ω. 5. *Lapis Bononiensis calcinatus, sive Phosphorus Mineralis. Mr. Bourguet.*

ω. 6. *Charta, ex Asbesto Lapide Hungarico facta. Dr. Breyne.*

ω. 7. *The Caput mortuum of Amber: or what remains after the Salt, Oil, and Spirit, are distill'd off.*

ω. 8. *Alumen Crystallizatum, ex lixivio Lapidis scissilis Eliariensis confectum. Dr. Leopold.*

ω. 9. *Tartar of Rhenish-Wine; from Germany.*

ω. 10. *Tessellæ of Paste, and Glafs, red, yellow, blue, and green, being Remains of the antient Opus Tessellatum; found on the Shores of Pozzuolo, Italy. Mr. Howard. Some of these are worn, smooth'd, and rounded, so as to appear like small Pebbles, by the Agitation of the Sea; in like manner as Fragments of Marble-Stone, &c. beat out of the Cliffs, commonly are. There is among them a Piece of green Glafs, of a very remarkable Constitution; being thick set with Pipes of a yellow Colour.*







AN  
ADDITION  
TO THE  
CATALOGUE  
OF THE  
Foreign Extraneous Fossils,  
In the COLLECTION of  
J. WOODWARD M. D.

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## A CATALOGUE of the Additional Foreign Extraneous Fossils.

### *Vegetabilium Partes ex Tellure eruta.*

- α. 1. **L**ignum Fossile, è Turffa-Fodinis Belendorffiensibus, tertio à Lubeca Lapide erutum. M. à Melle.
- α. 2. Lignum Fossile Quernum, è Turffa-Fodinis Belendorffiensibus, tertio à Lubeca Lapide, sub Materia bituminosa, qua aliquot Orgyarum Altitudine illud contexerat erutum. M. à Melle.
- α. 3. A Piece of Fossil-Wood, found in the Peat-Earth, about ten English Miles from Lubec; wherein there are frequently found Oak, and Birch-Trees. M. à Melle.
- α. 4. Folium Castaneæ, recens explicatum, eâque plane Conditione qua solent Folia hujus Arboris exeunte Maio Mense, quo Tempore Diluvium accessit; in sulphuris Minera, ad xxx Pedum Profunditatem in Agro Forolivienfi effossa. Signior Fos. Monte.
- α. 5. Lapis fissilis Filice notatus; ex Argenti Fodina Manebaensî, Ducatus Vinariensis. G. Frid. Milius.

### Conchylia Marina. Univalvia.

- β. 1. Vermiculus Marinus. Effossus inter plura alia, in Loco dicto il Mavignone, Bononia. M. Bourguet.
- β. 2. Tubuli vermiculares minores, instar Cornu Ammonis in se revoluti. Ex Zopica, Ditionis Veronensis. M. Bourguet.
- β. 3. Siphunculi marini, etiam ex Loco dicto il Mavignone.
- β. 4. Dentalis major Scandinaviensis Italia. Respondent huic Tubuli aut  
Siphunculi Maris, Dentales dicti majores Bonanni, p. 91. n. 8. uti &  
Denticulus Elephantis. Rumph. p. 123. T. xli. j. Dr. Scheuchzer. Mus. Diluv. p. 53. n. 354.
- β. 5. Enthalia fossilia, à Sassuolo, Ditionis Mutinensis. M. Bourguet.
- β. 6. Enthalia. ex Agro Bononiensis. M. Bourguet.
- β. 7. Patella Fossilis, cucullata. Chaumont, per Gisorre. Dr. Füssien.

### Conchylia Marina. Turbinata. Nautili.

- γ. 1. Nautilus Oryctographia mea Tab. 2. delineatus. D. Bayer.
- γ. 2. Nautilitarum Species admodum singularis, quippe qua à vulgaribus Nautilitis sinuosa parietum qui concamerationes distinguunt

Construptione paululum defleendo, ad Cornua Ammonis, concamerationes magis minusque anfractuosas nacta, propius accedunt. Hoc Numero designata Specimina, gyri Partem priorem haud concameratam cuncta conservant, qua mutilati apparent, qui sequenti Numero sistuntur. Reperta circa Munden aut Hildesiam Oppida.

γ. 3. Nautilitæ alij concamerationibus frequentioribus instructi. Ibid.

#### AMMONITÆ.

δ. 1. Ammonites Lineis pluribus Serpentiniformibus, concamerationes quibus olim instructus erat declarantibus, ubique depictus. Repertus circa Munden aut Hildesiam Oppida.

δ. 2. Ammonites alius talis sulcatus. Ibid.

δ. 3. Alius; cujus quidem una Superficies aculeis circa Marginem dispositis exornata conspicitur: altera vero Aëris humidi & nitrosi Injuria licet exesa sit, nihilo secius valde notabilis est. In eamq; Parietes quibus olim gaudebat concamerationum, eroso Lapide, quodammodo prominentes, & idcirco accuratius discernendas passim exhibet. Ibid.

δ. 4. Nautilites præcedentium Ammonitarum adinstar Concamerationes olim obtinens plurimum anfractuosas, nunc Lineis illis Serpentiniformibus saltem adumbratas. Ibid.

δ. 5. Ammonita marmoreus. Querford. Dr. Hugo.

δ. 6. Cornu Ammonis, in Marga Neostadiensis. Dr. Hugo.

δ. 7. Impressiones Cornu Ammonis in Geode Altorfina. D. Bayer.

δ. 8. Cornua Ammonis Agri Altorfini. In Oryctographia sua descripsit. D. Bayer.

δ. 9. Ammonita Eldagensis, prope Hannoveram. Dr. Hugo.

δ. 10. Cornu Ammonis Merienhagensis, Præfectura Laaenstein. Dr. Hugo.

δ. 11. Cornu Ammonis non spinatum, in extremo Ambitu sulcatum, binis Tuberculorum Ordinibus, uno in summâ Spirâ, altero prope sulcum, striis insuper binis vel ternis ad prima, hinc ternis ad secunda Tubercula, aliquibus etiam in spatiis intermediis excurrentibus. Achelbergbey Rotlingen, bichorio à Tubinga.

δ. 12. Cornu Ammonis non spinatum, valde compressum, læve, ex Pyrite ferrugineo. Ex Comitatu Neocastrensi. Dr. Scheuchzer, N° 17. Mus. Diluv. p. 22.

δ. 13. Cornu Ammonis spinatum, spina Loco in Ambitu crenatum, valde compressum, læve, Spirâ latiori unica terminatum. Dr. Scheuchzer, Mus. Diluv. Ibid. N° 100.

δ. 14. Cornu Ammonis spinatum, crassius, striis undatim & bifurcatim spiram trajicientibus, & in Tania veluti articulata concurrentibus, Angulosq; varios formantibus, quorum apex Caput respicit.

Prope Schavenburgenſe Balneum Territorij Baſilienſis, Ochracei eſt Coloris, ſepe aurea armatura ſplendens: Dorſum aliquando Taniola trajicit. Dr. Scheuchzer, Muſ. Diluv. p. 30. N° 105.

δ. 15. Idem abſque Taniola. Ex Territorio Baſilienſi prope Schavenberg. Dr. Scheuchzer. Ibid. N° 107.

§. 16. *Cornu Ammonis, spinatum, Taniolâ Spina Loco Spiram ex-  
timam ambiente, valde compressum, læve vel undatis striis parum ele-  
vatis donatum, unica Circumvolutione terminatum. Ex Comitatu  
Neocastrænsi. Dr. Scheuchzer, Mus. Diluv. p. 29. N° 98.*

§. 17. *Cornu Ammonis spinatum læve, Spira media in Gibbum  
elevata, & sensim ad Spinam, seu Dorsum acuminatum declivi.  
Ex Agro Veronensi. Dr. Scheuchzer, Mus. Diluv. p. 33. N° 138.*

#### TROCHI.

§. 1<sup>x</sup>. This Trochus very nearly approaches, if it be not the  
same, with that Species in the Catalogue of the extraneous English  
Fossils, e. 1. *Ex Loco vulgo dicto il Mavignone. Mr. Bourguet.*

#### NERITÆ.

§. 1<sup>\*</sup>. *Nerita, Colorem nativum adhuc retinentes, prope Herren-  
hausen effossa.*

#### COCHLEÆ, Forma compressiore.

ε. 1. *Cochlita Ore angustiori & depresso, ex Zopica, Ditionis Ve-  
ronensis. M. Bourguet.*

ε. 2. *Turbinata, ex Agro Veronensi. M. Bourguet.*

#### COCHLEÆ, Clavicula brevi.

ε. 3. *Cochlites, ex Val del Molin, Ditionis Veronensis. M. Bourguet.*

ε. 4. *Cochlea fossilis candidissima. Chaumont. Dr. Füssien.* This  
Species is found on the Shores of England: and is the same with  
that in the Catalogue of the extraneous English Fossils, e. 38.

ε. 5. *Eadem Species, ex Montibus Asolanis Ditionis Tarvisina.  
D. Zanichelli. Purpura Lingua perforatur.*

ε. 6. *Eadem Species. Ex Loco vulgo dicto il Mavignone. Mr.  
Bourguet.*

ε. 7. *Eadem Species. Ex Ronca Ditionis Veronensis. M. Bourguet.*

ε. 8. *Eadem Species. Ex Agro Bononiensi. M. Bourguet.*

#### COCHLEÆ, Clavicula productiori.

ε. 9. A very large Cochlea. Found near Paris. Dr. Füssien.

ε. 10. *Ex Val del Molin. M. Bourguet.*

ε. 11. *Chaumont. Dr. Füssien.*

ε. 12. *Ex Monte Mario prope Romam. D. Zanichelli.*

ε. 13. *Ex Val del Molin, Ditionis Veronensis. Mr. Bourguet.*

ε. 14. *Digg'd up near Paris. Dr. Füssien.*

ε. 15. *Ex Val del Molin. Mr. Bourguet.*

ε. 16. *Weinheim Palatinatus. Mr. Rosinus.*

ε. 17. *Val del Molin, Ditionis Veronensis. Mr. Bourguet.*

ε. 18. *Weinheim Palatinatus. Mr. Rosinus.*

ε. 19. *Digg'd up near Paris. Dr. Füssien.*

ε. 20. *Ibidem.*

ε. 21. *Digg'd up with other Shells, several Yards deep, near  
James River, Virginia, 20 Miles from Sea. Mr. Miller.*

ε. 22. *A Stone cast in some Shell, probably of this Kind. Lu-  
nenberg.*



- €. 23. *Ex Agro Bononiensi.* Mr. Bourguet.  
 €. 24. *Digg'd up near Paris.* Dr. Fussiau.  
 €. 25. *Ex Hetruria, prope s. Quirico.* Mr. Bourguet.  
 €. 26. *Ibid.*  
 €. 27. *Ex Montibus Asolanis, Ditionis Tarvisini.* D. Zanichelli.  
 €. 27<sup>x</sup>. *Cochlea exigua ex Monte in Agro Wirtembergico effossa.*  
*Misit Rosinus lentilias Archiater Duc. Wirtemberg. Vide Epist. ejus.*

## RHOMBI.

- €. 28. *Digg'd up near Paris.* Dr. Fussiau.  
 €. 29. *Effossus prope Pagum Harleshausen, in Hassia.* Mr. Rosinus.

## CYLINDRI.

- €. 30. *Ex Loco vulgo dicto il Mavignone.* Mr. Bourguet.  
 €. 31. *Ex Monte Mario prope Romam.* D. Zanichelli.  
 €. 32. *Effossus juxta Parisios.* Dr. Fussiau.

## BUCCINA, non rostrata, Clavicula brevior.

- €. 33. *Turbinata auriti, ex Rivo (vulgo) di Ziavaro Ditionis Bononiensis.* S. Zanichelli.  
 €. 34. *Ex Loco vulgo dicto il Mavignone.* Mr. Bourguet.  
 €. 35. *Ex Montibus Asolanis, Ditionis Tarvisina.* D. Zanichelli.  
 €. 36. *Effossus prope Pagum Harleshausen, in Hassia.* D. Rosinus.

## BUCCINA, non rostrata, Clavicula productiori.

- €. 37. *Ex Montibus Asolanis, Ditionis Tarvisina.*  
 €. 39. *Ex Agro Bononiensi.* Mr. Bourguet.

## BUCCINA, rostrata, Clavicula brevior.

- €. 40. *Buccinum striatum; in Hassia, prope Pagum Harleshausen, effossus.* Mr. Rosinus.

## BUCCINA, rostrata, Clavicula productiori.

- €. 41. *Effossus juxta Parisios.* Dr. Fussiau.  
 €. 42. *Ex Montibus Asolanis, Ditionis Tarvisina.* D. Zanichelli.  
 €. 43. *Digg'd up in Virginia with €. 21. I have seen several of this Kind digg'd up in Maryland.*  
 €. 44. *Ex Monte Mario prope Romam.* D. Zanichelli.  
 €. 45. *Effossus in Loco d. il Mavignone.* Mr. Bourguet.  
 €. 46. *Ab eodem Loco.*  
 €. 47. *Effossus juxta Bononiam, Halia.* Dr. Scheuchzer.

## BUCCINA, bilingua.

- €. 48. *Ex Montibus Asolanis Ditionis Tarvisina.* D. Zanichelli.  
 €. 49. *Ex Loco vulgo dicto il Mavignone.* Mr. Bourguet.  
 €. 50. *Ex Monte Mario juxta Romam.* D. Zanichelli.

## BUCCINA, ampullacea.

- €. 51. *Ex Val del Molin, prope Ronca, Ditionis Veronensis.* Mr. Bourguet.  
 €. 52. *Ex Monte Mario prope Romam.* D. Zanichelli.

*Umbilicus marinus.*

1. 53. *Turbinatorum Opercula Umbilici marini dicti. Ex Scandianensibus Collibus, Ditionis Mutinensis. Mr. Bourguet.*

*Conchylia bivalvia. Pectines.*

2. 1. The Bottom Valve of a very large Pecten, digg'd up, at the Depth of several Yards, 20 Miles from Sea, near *James River Virginia.* Mr. Miller.

2. 2. Another, less; of the same Kind. *Virginia*, found with the foregoing.

2. 3. Another; having the Bottom of a *Balanus* affix'd upon it: found with the preceding.

2. 4. Three, of the same Species. Digg'd up in the *Morea* [*Peloponnesus.*] D. Zanichelli.

2. 5. Another. *Ex Monte Creazo, Ditionis Vicentinae. Mons. Bourguet.*

2. 6. Another, digg'd up near *Corinth.* M. Bourguet.

2. 7. Three, of a somewhat different Species. *Ex Agro Bononiensi. M. Bourguet.*

2. 8. Of the same Species. *Pecten fossilis Marino, & Colore, & Figura integra, prorsus similis, Striis vel Fasciis latiusculis parum elevatis: Coloris sunt nigricantis vel terrei. Ex Argilla Locodicto Co di Bò erutus, Bononia. Dr. Scheuchzer. Mus. Diluv. p. 69. N. 585.*

2. 9. Two small Pectines. Digg'd up *prope Hildesiam. M. Rosinus.*

## O S T R E A.

1. 1. The Bottom Shell of an Oyster, found, in *Virginia*, with 2. 1. *supra.*

1. 2. The upper Valve of a small Oyster crenated within near the *Cardo, Virginia.* Found with the foregoing.

1. 3. The upper Shell, very crass, of a Bivalve of the Oyster Kind, *Virginia.* Found with the foregoing.

1. 4. *Ostracites Bivalvis, à Corintho. D. Zanichelli.*

1. 5. *Ostracites, ex Insula Ægyna. M. Bourguet.*

1. 6. Both Shells of an Oyster. *Effossa prope Neapolim. Signior Zanichelli.*

1. 7. The lower Shell of an Oyster, digg'd up in the *Morea.* Mr. Bourguet.

1. 8. *Ostreon recurvum. Ex Ripa Fluminis Neostadiensis. Dr. Hugo.*

1. 8\*. *Ostreï oblongi Valva inferior convexa. Ex Castronovo in Ditione Cadurina. D. Zanichelli.*

1. 8\*. *Ostreï majoris Operculum, ex Foro Julio. Mr. Bourguet.*

*Ostrea Arborea.*

1. 9. *Ostreum plicatum majus. Rumpfi Rariteit Kaamer. p. 156. Tab. 47. Tit. c. fossile ex Comitatu Badensi. Dr. Scheucher. Tho'*

I much doubt whether this be one. There are several *East-India* Shells found also in the *West-Indies*.

*Ostrea Figura angusta Roſtro longo recurvo.*

¶ 10. *Concha rugosa, frequens, ad Pagum Winkelhaid, Agri Altdorf.* Dr. Bayer. This is of the same Kind with those found commonly in *England*. See the Catalogue of Extraneous *English* Fossils, f. 181. & seq.

O S T R E I D E S.

¶ 11. Two Bivalves, twirl'd at the Cardines, digg'd up, in *Virginia*, with the Pectines 2. 1, 2, 3. *supra*. There are of the same Species found, in great Numbers, in the Cliffs betwixt *Limington* and *Christ-Church*; a Thing very remarkable. See the Catalogue of these at N<sup>o</sup> 7.

*Concha anomia, Fab. Col. laeves.*

¶ 1. *Concha anomia, c. Entrochis effossa, in Ducatu Wirtembergenſi.* M. Rosinus.

¶ 2. *Concha anomia, ex agro Quersfurtenſi.* Dr. Kifner.

¶ 3. *Dua Concha anomia, ex Antro Nebel-loch, Wirtemberg.* Dr. Kifner.

¶ 4. *Ex Territorio Wirtembergenſi.* Dr. Kifner.

¶ 5. *Concha anomia Fab. Col. Species; eruta prope Coburgum Saxonia.* Dr. Kifner.

¶ 6. *Ex Agro Buxovillano, in Alsatia.* Dr. Kifner.

¶ 7. *Concha anomia, ex Comitatu Badensi.* Dr. Scheuchzer.

¶ 8. *Ex Agro Veronenſi.* M. Bourguet.

*Concha anomia sulcata.*

¶ 9. *Pectunculus striatus amplo in Ora media sinu donatus, Cortice albo Margaritarum instar splendente adhuc vestitus. Ex Comitatu Neocastrenſi passim, & prope Oppidum in Marga carulescente.* Dr. Scheuchzer. *Mus. Diluv. p. 63. N. 487.*

¶ 10. *Pectunculus Neocastrenſi major, dense striatus, ad mediam Oram sinuatus cinerei Coloris, lapideus. Montis Legerii; reperitur & in Randij Monte.* Dr. Scheuchzer. *Mus. Diluv. p. 63. N. 494.*

¶ 11. *Pectunculites striatus; prope Biennam.* Dr. Scheuchzer.

¶ 12. *Pectunculus striatus. Ex Monte Legerio; Ditionis Tigurina.* Dr. Scheuchzer.

¶ 13. *Pectunculus subspharicus. List. de Cochlit. Angl. Tit. 55. Ex Comitatu Badensi.* Dr. Scheuchzer.

¶ 14. *Concha anomia Sulcata Agri Altdorf.* Dr. Bayer.

¶ 15. *Concha anomia sulcata. Found in Burgundy, France.* Signior Benedetti.

¶ 16. *Nuclei Ostreopectinum globosiores striis duplicibus ad Marginem quidem paucis sed eo crassioribus, versus Verticem vero copiosioribus & simul subtilissimis obducti.* M. Rosinus.

¶ 17. *Concha anomia sulcata, ex Agro Buxovillano, in Alsatia.* Dr. Kifner.

¶ 18. *Concha anomia sulcata, ex Tractu Hildesienſi, & quidem loco Marvel-Kukle dicto.* Dr. Kifner.

0. 19. Threc small *Concha anomia sulcata*. Ex Agro Veronensi. Mr. Bourguet.

0. 20. Two *Concha anomia* Roſtro pertuſo eleganter ſtriata, non deſcripta. Agri Altdorſini. Dr. Bayer.

*Concha, Anomiis affines.*

1. 1. *Oſtreopectinita quadratam adſectans Figuram ſubtiliſſimis ſtriis ornatus*. Nuclei huiusmodi *Oſtreopectinitarum* quibus *Apophyſes* longa & acuta *Figuram hyſteroideam* imprimere ſolent, ea propter *Hyſterolithi* appellari ſuere. Hic & ſequentes *Oſtreopectinita* ubiuis cum *Entrochis* reperiuntur. M. Roſinus.

1. 2. *Oſtreopectinita alatus, Figurâ circumſcriptus trigonâ, ſtrias pariter ſubtiliores ſortitus*. M. Roſinus.

1. 3. *Oſtreopectinita, paulo convexioris Figuræ, & Margine qua Vertici opponitur depreſſori atque inflexo*. M. Roſinus.

1. 4. *Oſtreopectinita, itidem ſtriatus, ovuli quodammodo refereus Figuram*. M. Roſinus.

1. 5. *Oſtreopectinita decirciniti magis Ambitus, ſubtiliſſimis ſtriis dotatus*. M. Roſinus.

1. 6. *Oſtreopectinita paucioribus, iisque craſſiusculis, & velut imbricatis ſtriis*. M. Roſinus.

1. 7. *Similes ferme, ſtriis crebrioribus & ſubtilioribus inſignes*. M. Roſinus.

1. 8. *Striis acutioribus diſtincti*. M. Roſinus.

1. 9. *Oſtreopectinita flabelliformes ſubtiliſſime ſtriati*. M. Roſinus.

1. 10. *Duo Oſtreopectinita convexiores, & prorsus laeves, alis inſtructi breviaribus obtuſioribusque*. M. Roſinus.

1. 11. *Pectunculus denſiſſime, ac ſubtiliſſime ſtriatus, ſubrotundus, Valvis magis compreſſis, aque Convexis plerumque ſinuatis*. Ejusdem Loci. Dr. Scheuchzer. Muſ. Diluv. p. 68. N. 571.

1. 12. *Hyſterolithos alatus, ſive Oſtreopectinita nucleus, Teſtâ ſuâ, in Vertice præſertim Hyſteromorpha, nudatus*. M. Roſinus.

1. 13. *Hyſterolithus prope Coblentz, Archiepiſcopatus Trevirenſis*. This Body is caſt or moulded in a Bivalve.

1. 14. *Oſtreopectinita rarioribus quidem ſed ſimul craſſioribus obductus ſtriis*. M. Roſinus.

1. 15. *Strictioris Figuræ & Alarum longiorum, Specimen*. M. Roſinus.

1. 16. *Exemplar aliud breviorum quidem Alarum, ſed Striis copioſioribus, tenerioribusq; ornatum*. M. Roſinus.

1. 17. *Duo quorum Vertices ſuſum erecti ab inferiore Teſtâ longius diſtant; qua in re ab omnibus aliis qui Vertices aduncos, atque ab inferiore, ut ita dicam, Teſtâ non adeo remotus obtinere ſolent, plurimum differunt*. M. Roſinus.

1. 18. *Pectunculus rarioribus ſtriis, ſinus à Cardine ad mediam Oram per Doſum integrum excurrente donatus*. Geroldſtein, in Conſinio Trevirenſis ac Lexemburgenſis Territorii: pertinet Locus ad Comittem de Manderscheid. Dr. Scheuchzer. Muſ. Diluv. p. 68. N. 567.

1. 19. *Duo, quodammodo Flabelliformes, Semicirculis Vertici ob-*



*tensis pluribus, qui striis subtilissimis ubiq; interfecantur curiosius distincti.* M. Rosinus.

1. 20. *Conchites polyginglymus, insolita prorsus Patellamque amulante Figura ab aliis quibusvis longius recedens.* M. Rosinus.

1. 21. *Tales operculo, sive Testâ alterâ adhuc occlusi.* M. Rosinus.

1. 22. *Pectunculus Dorso valde convexo, & media Lacuna sinuato, Ventre seu Valva altera potius concava, ad Latera utrinque veluti alatus.* Budinga in Luto, unde *Busocephali Krotenstein* Nominè accepi. Dr. Scheuchzer, *Mus. Diluv.* p. 69. N. 579.

*Polyleptoginglymi Figurâ subrotundâ.*

1. 1. *Concha Polyleptoginglyma, ex Palatinatu Weinheimensi; de his Geierus de Montibus conchiferis, 4<sup>o</sup>.* Dr. Kiser.

1. 2. *Chama Polyginglyma maxima, cum adnatis, quæ Piscem olim Testâ connectebant, Ligamentorum nervorum reliquiis.* è Monte Hoberg prope Alzey Palatinatus. M. Rosinus.

1. 3. *Chama Polyginglyma, Colore nativo quodammodo adhuc imbuta, in Hassia prope pagum Harleshausen effossa.* M. Rosinus.

1. 4. *Exemplar Bivalve, ejusdem Loci.* M. Rosinus.

1. 5. *Chama, ex Monte Mario prope Romam.* S. Zanichelli.

1. 6. *Digg'd up in Virginia, along with 1. 1. This is of the same Species with those in the Catalogue of the English Extraneous Fossils, f. 420, 421, which were digg'd out of Harwich Cliff. They are found in great numbers, on the Coasts of Barbadoes, Jamaica, and the Bahama Islands. They were also found on the Shores of England.*

1. 7. *Chama rotunda seu circinata ventricosior transversim striata Coloris flavescantis; Arenâ flavâ & Testaceorum aliorum Fragmentis repleta. Ex Monte Winterkasten prope Weissenstein, haud longe Cassellis.* Dr. Scheuchzer. *Mus. Diluv.* N. 379. p. 56.

1. 8. *Chama Polyginglyma differentis Magnitudinis ad Pedem prædicti Montis Hoberg effossa, è quarum Contemplatione Geyerus in Tractatu de Montibus Conchyferis Alzeyensibus, recte quidem colligebat, per Incrementi successivi Gradus varios, in minoribus hujusmodi Conchis observandos, maximas tales ad summam quam assequuntur sunt Magnitudinem olim pervenisse. Ast quæ, de Modo quo id factum sit, ibidem tradit, insulsissima sunt, & à Veritate etiam Historicâ maxime aliena.* M. Rosinus.

1. 9. *Concha Polyleptoginglyma perforated by the Purpura. Digg'd up, in Virginia, along with 1. 1.*

1. 10. *Another, less, found with the precedent, in Virginia.*

*Polyleptoginglymi Figurâ oblonga.*

1. 11. *Ex Monte Mario, prope Romam.* Signior Zanichelli.

1. 12. *A Bivalve out of a Mountain near Certaldo, the Town where Boccacius was born, in Tuscany, M. Misson. This Gentleman formerly offer'd his Thoughts, concerning these Bodies, in the Voyage d'Italie. Vol. II. Lett. 30. p. 312. & seq. 4th Edit. But he frankly now acknowledges, that, upon Perusal of the*

*Natural*



*Natural History of the Earth*, he has changed those Thoughts, and believes these Bodies Remain<sup>e</sup> of the universal Deluge.

α. 13. Digg'd up, in *Virginia*, with ζ. 1. and ζ. 3.

*Pectunculi laeves.*

α. 1. *Concha ex Agro Bononiensi*. S. Zanichelli. This Species is found living on the Coasts of England: and is also digg'd up at *Richmond*. Vid. Catalogue of the Extraneous *English* Fossils, f. 433.

α. 2. *Ex Rivo di Ziavaro Ditionis Bononiensis*. S. Zanichelli.

α. 3. *Conchites in hujus Speciei Testa formati*. *Ex Rivo del Inferno in Ditione Bononiensi*. S. Zanichelli.

α. 4. *Nucleus Chamae lavis lapideus, prope Hildesiam inventus*. M. Rosinus.

α. 5. *Chamites lavis Mineræ Ferri infarctus, ex Arena fodinæ Teutenti Hassiacæ*. Mr. Rosinus.

α. 6. Found near *Paris*, Dr. *Fussien*. This Species is also found in *Harwich-Cliff*. See the Catalogue of the *English* Extraneous Fossils, f. 447.

*PECTUNCULI fasciati.*

α. 7. *Ex Monte Mario prope Romam*. S. Zanichelli.

α. 8. *Tellinites Bayeri Oryctogr. pag. 75.*

α. 9. Digg'd up in *Virginia* along with ζ. 1. *supra*. This Species is also found in *Harwich-Cliff*. See the Catalogue of the *English* extraneous Fossils, f. \*489.

*PECTUNCULI a Cardine ad Marginem striati.*

α. 10. *Pectunculus subtiliter striatus. Ex Arenafodina Teutenti Hassiacæ*. M. Rosinus.

*PECTUNCULI à Cardine ad Marginem sulcati.*

α. 11. *Pectunculites integerrimus striatus, ex Peloponneso*. M. Bourguet.

α. 12. *Pectunculus juxta Parisios effossus*. Dr. *Fussien*.

α. 13. *Pectunculus ex Agro Herbipolensi*. Dr. *Kisner*.

α. 14. *Ex Saxo prope Sancto-Gallum*. Dr. *Scheuchzer*.

α. 15. *Ex Monte Mario prope Romam*. S. Zanichelli.

α. 16. *Ex loco dicto il Mavignone*. M. Bourguet.

α. 17. A Pair of *Pectunculi* digg'd up in *Virginia* along with ζ. 1.

*PECTUNCULI Figura oblonga, à Cardine ad Marginem protensi.*

α. 18. A Stone cast in a *Pectunculus*, found above 20 Foot deep, above 20 Miles from Sea, by *Lyons-Creek, Virginia*.

α. 19. A Valve of a *Pectunculus*, very large and crass; with the *Labia* undulated. Found in *Virginia* along with ζ. 1. This and the following nearly approach the Class of the *Cunei*.

α. 20. Another, found with the preceding.

α. 21. *Ex loco d'il Mavignone*. M. Bourguet.

α. 22. *Ex Agro Quersfurtensi*. Dr. *Kisner*.

## CUNEI.

λ. 23. *Conchites bivalvis transversim striatus*. Ex Territorio Basilienfi. Dr. Scheuchzer. There are of this Species found very commonly in Gloucestershire. See the Catalogue of the English extraneous Fossils, f. 572, & seq.

λ. 24. *Muities fluvialis major*. Agri Altdorfini. D. Bayer.

## TELLINÆ.

λ. 25. Digg'd up in Virginia along with ζ. 1. λ. 19, 20. Mr. Miller.

## SOLENES.

λ. 25\*. *Solenes minimi*, ex Tractu Hildesienfi. Dr. Kifner.

## PINNÆ.

λ. 26. *Pinna*, ex Blancano Monte Bononiæ. M. Bourguet.

*Conchylia multivalvia.*

μ. 1. A *Balanus* digg'd up, in Virginia, along with ζ. 1. *supra*. Mr. Miller.

μ. 2. Several *Balani* growing on the Shell of a *Pecten*. Ex Monte Blancano, Agri Bononiensis. M. Bourguet.

*Echini spatagi.*

ν. 1. *Echinita*, *Chelonites dictus*, ex Schio Ditionis Vicentina. Mr. Bourguet.

ν. 2. *Echinus Brissoides*, ex Agro Veronensi. Mr. Bourguet.

ν. 3. *Alius*, ex eodem Loco. Mr. Bourguet.

ν. 4. *Alius*, ex eodem Loco. Mr. Bourguet.

ν. 5. Ex Agro Veronensi. Dr. Scheuchzer.

ν. 6. Ex Agro Altdorfino. Dr. Bayer.

ν. 7. *Echinites spatagus*. Ex Territorio Neocastrensi. Vid. Specim. Lithogr. Helvet. Dr. Scheuchzer.

ν. 8. *Echinus exiguus*, prope Pagum Reichmanshof, Agri Altdorfini. D. Bayer. This is of the same Species with the *Echinus Discoides* in the Catalogue of the extraneous English Fossils, Class 5. Part 1. Sect. 2. Artic. 2. Divis. 2. Found in Oxfordshire and Gloucestershire.

ν. 9. *Echinites major* ex Canali Herrenhawsenfi, Anno 1719. in Usum Machinæ hydraulica facto. Dr. Hugo.

ν. 10. *Echinites Wagricus Siliceus*, è Littore Maris Baltici ad Pagum Niendorp collectus, D. à Melle Lubecensis. Qui Epistolam de *Echinitis Wagricis* edidit 4°. Lubecæ 1718.

ν. 11. *Echinites Wagricus*. Ibid. D. à Melle.

ν. 12. Ab eodem Loco. Idem.

ν. 13. Ab eodem Loco. Idem.

*Echini Ovarij.*

ξ. 1. *Echinus*, ferè orbicularis, viginti Papillarum seriebus obfitus. *Hildesienfis*, è Monte Galgonberg dicto. M. Rosinus.

ξ. 2. *Echinus ovarius* Vertice rotundiore, striis & tuberibus quibusdam grandioribus conflatis donatus, ex Ovis anguinis quorundam. *List. Cochlit. Angl. Tit. 21. Ex Agro Basiliensi. Huic respondet Echinus Rumphij Hist. Amboyne, TAB. XIV. B. Dr. Scheuchzer Mus. Diluv. p. 85. N° 805.*

ξ. 3. *Lapides Judaici*, found at the Foot of Mount Lebanon, 14 Miles from Tripoli in Syria. Capt. Price. These appear plainly to have been clavated Spikes of some kind of *Echinus Ovarius*. There are of these found in England. See the Catalogue of the extraneous English Fossils, Class 5. Part 2.

*Corpora quadam Echinis, ut videtur, affinia.*

o. 1. The *Stella Marina* of M. Rosinus, sent by Mr. Linck, found in Rubble-Stone commonly made use of and burnt for Lime, together with Scalops and other Sea-Shells, *Asteria*, and *Entrochi*, at the Depth of 6, 12, or more Ells, at *Querford* between *Brunswick* and *Wolfenbotle*. There is an Account, but a very wild and romantick one, given of it by Mr. Rosinus in his Book *de Lithozois* 4°. - - - 'Tis of the same Constitution with the Shells of the fossil *Echini Ovarij*, and doubtless have serv'd as Trains or Appendages to some like Bodies; as the *Entrochi* and *Asteria* have of others. This appears to have had an Hollow in the middle, which is since filled with grey Spar.

o. 2. Another, from the same Place, tho' somewhat compress'd, is near intire; and retains the first Joint of the *Pedunculus*, by which this Body was held and tack'd to the Shell.

o. 3. Another, from the same Place.

o. 4. *Pentagonum stellare*, quale Tab. II. Tentam. de Lithozois, N° 1. exhibetur à Cl. Auctore M. R. Rosino. This is the Basis of one of these Bodies. There are with it four small Joints of the same Body.

o. 5. *Modiolus stellatus Luidij*, Spec. Lith. Helv. p. 10. Fig. 13 a. Ex Monte Randio. Dr. Scheuchzer, Mus. Diluv. p. 97. N° 982. These Bodies are found in various Places in England; and are Joints of Trains belonging to some Body of the same Tribe with the foregoing.

*Entrochi. Trochite.*

π. 1. *Entrochi*, Montis Legerij, descripti in Specim. Lithograph. Helvet. Dr. Scheuchzer.

π. 2. *Trochi*, & *Entrochi*, specierum variarum; quos, nescio quo Jure, *Asterias* appellat M. Rosinus; & describit in Tent. de Lithozois. Reperi in Ducato Wirtembergico.

π. 3. Alij, diversarum adhuc specierum, descripti in eodem Tentamine. Horum nonnulli, incisi & latigati, substantiam interiorem ostendunt

*ostendunt quasi Seleniticam, & Figuras Pentaphylloides, seu Stellares, etiam intimas Medullas, permeantes. In Duc. Wirtemberg. These, with the Pentaphylloid Figures, are the Entrocho-Asteria. M. Rosinus.*

π. 4. *Alij, etiam diversi. Descripti in eodem Tentamine. Hi Trochi effodiuntur simul cum diversi Generis Conchylijs Marinis. Ibid.*

π. 5. *Alij, adhuc diversi. Ibid.*

π. 6. *Exordia Radiorum sigillatim emissorum ad Trochos pertinentium. Ibid. These are Parts of the Shells, with the first Joints of the Entrochi, which are Appendages or Trains to them.*

#### ASTERIÆ.

ρ. 1. *Asteria ab ebulliente, quem liquidum altius olim imbibebunt, Pyrite, mirum in modum aucta atq; extumefacta. Ex Ducatu Wirtemberg. D. Rosinus.*

ρ. 2. *Asteria, ex Comitatu Neocastrensi. Dr. Scheuchzer.*

#### PISCIIUM PARTES.

σ. 1. *Piscis in Lapide fissili, Osterodensi. Dr. Hugo.*

σ. 2. *Piscis Fragmentum in Lapide praduro. Ex Agro Veronensi. Mr. Bourguet.*

σ. 3. *Pisciculus in Lapide, Agri Veronensis. D. Zanichelli.*

σ. 4. *Piscis in Lapide, à Canobine Montis Libani. D. Sherard.*

σ. 5. *Lapilli istis persimiles qui Piscium Capitibus circa Exortum Spina Dorse innasci solent. Ex Arena-Fodina Tententi Hassiaca. M. Rosinus.*

#### QUADRUPEDUM PARTES.

τ. 1. *Os fossile erutum prope Marienbornam Comitatus Ysenburgici. Dr. Kistner.*

τ. 2. *A boney Substance, digg'd up at - - - in France. Mr. Beavor, the Queen's Jeweller. He says it becomes of a blue Colour if heated at a Flame or Fire. See the Catalogue of the Second Addition of English Native Fossils, aa. 8.*

τ. 3. *Turcois d'Auvergn en France. They were originally all white: and have been brought to these Colours in the Fire. Mr. Beavor.*

τ. 4. *Part of a large Bone found lodg'd in a pale brown Stone, in Spelunca Baumaniana Hercynia. Dr. Hugo.*

τ. 5. *A small Bone in like Stone, out of the same Cave. Dr. Hugo.*

τ. 6. *Part of a Bone yet smaller, out of the same Cave. Dr. Hugo.*

τ. 7. *Dens Lupi fossilis, ex Spelunca Baumaniana. Dr. Hugo.*

τ. 8. *Dens, forsan Apri, ex Crypta Baumaniana. G. Frid. Mihus.*

τ. 9. *Two Teeth, in Part of a Jaw Bone, digg'd up near Conzadt, in the Dutchy of Wirtemberg. M. Valkenierg.*



τ. 10. Two Teeth digg'd up, near *Constadt*, in the Dutchy of *Wirtemberg*, along with the precedent, and various Sea-shells. Mr. *Valkenier*. I am not without some Doubt whether this Gentleman was not impos'd upon in these.

τ. 11. A Piece of the Tooth of an Elephant broke off a Segment that was eleven Inches in Circumference, and two Foot long, but broke in Carriage from *Holland*, whence twas sent me by Mr. *Valkenier*, with the following Account. *Un Unicornu fossile du Longueur environ d'une aune, qui a été trouve sous la terre à Constadt dans le Duché de Wirtemberg en Suabe, ou l'on trouva, il y à sept ou huit ans, cinquante cinque de ces Especes, dont il y en avoit du longueur d'onze pieds, que j'ai vu dans l'Antiquaire du Duc dans sa Residence à Stutgard.* Of these, at the Request of Mr. *Valkenier*, there was an Account publish'd at *Schaphousen* in 4<sup>o</sup> 1701. by Dr. *David Spleissius*, under the Title of *Dissertatio de Cornubus & Ossibus fossilibus, Constadt*. This was a Frustum of the middle Part of the Tooth; so that doubtless it was very large. Why the Germans call this *Unicornu*, is not easy for me to imagine. I thought, before I had seen it, by this Account, and others I had formerly seen in the foreign Gazettes, that these Bodies had been Horns of the Narwhale or Unicorn Fish. But this may pass amongst many other Instances of the Carelessness of the Writers of Fossils, and of their Prejudices, which indeed have hitherto been such, that any Man is much more like to be misled than inform'd by what has been hitherto publish'd on that Subject. I believe the Tooth μ. 40. in the Catalogue of foreign extraneous Fossils, was found with this here: and consequently may be rather the Grinder of an Elephant, than of some Ceraceous Fish, as Mr. *Valkenier* imagin'd.

τ. 12. *Frustum Dentis Elephantis fossilis Agri Romani. S. Zanichelli.*

*Conchylia Masse Saxea confertim immista.*

υ. 1. *Cornua Ammonis in Lapide Scissili. Ex Hildesienfi Episcopatu. Dr. Hugo.*

υ. 2. *Congeries Pectunculorum varij Generis, ex Montibus Be-lunensibus Forojulij. Dr. Zanichelli.*

υ. 3. A Pholas, with other Bivalves, in a reddish brown Stone, having in it Sparks of Talc. *Frankforti ad Manum. Dr. Kifner.*

υ. 4. Iron-Stone, said to be rich, having various Bivalves and Impressions in it. From *Deuten* three Leagues from *Cassel* the Capital of *Hesse*.

υ. 5. *Massa lapidea, Chamis Turbinibusque referta, è Litore Maris Balthici, ad Pagum Niendorp. D. à Melle.*

υ. 6. *Lapis, præter plurimos Ostreopectinum, præsertim alatorum, nucleos, & impressa Vestigia, talem etiam Figuram cujus Imagines Tab. vi. † sub Littera A depicta exhibentur, continens. Frustum est aliud prægrandis Lapidis, qui ante Annos aliquot in Monte ad Rhenum prope Arcem Ehrenbreitstein sito inventus fuit. atque quia*



ob ingentem Molem integer Loco moveri haud poterat, ab Operariis multo Labore diffusus fuit, qua Ratione intus latentes, & solidissimo lapideo Cortice utrinque involuta hujusmodi Conchitarum Figura felicissimo casu detecta fuerunt. M. Rosinus.

v. 7. Conchula innumera in Saxo Neostadiensis Ripa.

v. 8. Alia largiores in Saxo ejusdem Ripa.

v. 9. Congeries Conchularum, ex Rivo (vulgo) del Mercato Ditionis Bononiedsis. D. Zanichelli

v. 10. Turbinata innumera in Massa saxeae, ex Ripa Neostadiensis. Dr. Hugo.

v. 11. Marga Scissilis, f. foliata, Conchyliis compressa, friabilia, & quasi calcinata, continens. Ex Neostadiensis Ripa, ubi miranda hujus Terrae laminosa Varietas Labrum Ripa constituit. Dr. Hugo.

v. 12. Lapis valde durus innumeros continens Strombos, prope Neoburgum Comitatus Hoyae.

v. 13. Conchyliorum bivalvium & turbinatorum Congeries in Saxo ex Istria. Mr. Bourguet.

v. 14. Turbinata & Bivalvia plurima in Massa saxeae Weissenburg, prope Moguntiam.

v. 15. Congeries Conchyliorum Massa saxeae commissorum ex Litore Veneto. D. Zanichelli.

v. 16. Conchyliis in Massa saxeae juxta Parisios effossa. Dr. Jussieu.

v. 17. Saxum Pectinibus refertum. Heldehsense. Dr. Hugo.

v. 18. Pectines in Massa saxeae effossa prope Heldehsiam.

v. 19. Massu saxeae Conchyliis minutissimis referta in nova Munitione Moguntini extensione reperta. Ex simili substantia tota Strata constant. Dr. Kifner.

v. 20. Congeries Bivalvium in Saxo, ex Rivo del Mercato Ditionis Bonon. S. Zanichelli.

v. 21. Bivalvia in Massa saxeae, ex Monte dicto il Sasso Bononia. Mr. Bourguet.

#### Corpora Marina incognita, ex Tellure effossa.

Φ. 1. Cauda cujusdam Animalis fossilis Fragmentum. Spec. Lith. Helv. p. 66. fig. 88. Figuratum novum, prope examinandum: ex altissimo Glaronesium Monte Guppen, v. vöpecq. Helv. A. 1705. Dr. Scheuchzer. Mus. Diluv. p. 97. N. 979.

Φ. 2. Lapides Frumentarii, seu Numismales, cum Concharum & Turbinatarum Congerie, ex Zopica, Ditionis Veronensis. Mr. Bourguet.

Φ. 3. Lapis Frumentarius, Agri Veronensis. S. Zanichelli.

Φ. 4. Lapis Frumentarius f. Numismalium Congeries. Ex Zopica, Ditionis Veronensis. Mr. Bourguet.

Φ. 5. Lapis Frumentarius pulcherrimus. Ex Zopica, à Boniolo Monte, Ditionis Veronensis. Mr. Bourguet.

Φ. 6. Lentis lapideae candidae in Saxo cinereo, copiosa, & elegantissima. Ex altissimi Montis Aubrig, Saitensium, Jugis. Dr. Scheuchzer. Mus. Diluv. p. 94. N. 946.

Φ. 7.

Φ. 7. *Lapides numismales majores. Juxta Veronam.* Mr. Bourguet.

Φ. 8. *Lapis numismalis major. Ex Zopica, Ditionis Veronensis.* Mr. Bourguet.

Φ. 9. *Lapides frumentarij, ex Agro Veronensi.* S. Zanichelli.

Φ. 10. *Lapides numismales. Ex Zopica Ditionis Veronensis.* Mr. Bourguet.

Φ. 11. *Lentes lapideae, albida, ex Saxis marmoreis ad Thermas Fabarias.* Dr. Scheuchzer. Mus. Diluv. p. 95. N° 959.

Φ. 12. *Lenticulae fossiles, s. Lapides numismales vulg. circa Parisios frequentes.* Dr. Jullieu.

Φ. 13. *Lentes minores solutae. Ad Pagum Issy prope Lutetiam Parisiorum.* Dr. Scheuchzer. Mus. Diluv. p. 96. N° 971.

Φ. 14. *Lentes lapidei, albi, sive numismales Lapides minores. Ex Coneglian, Foro Julij.* M. Bourguet.

Φ. 15. *Lentes lapidei, ex Zopica Ditionis Veronensis.* Mr. Bourguet.

*Conchyilia fluviatilia, & lacustria, ex telluris Visceribus eruta.*

Χ. 1. *Cochleae olim Lacustres, seu fluviatiles, Spiris (ut in Ammonita fieri solet) in se invicem revolutis constantes, Marga candida Mundensi in Montibus editissimis haud raro permixta.* Mr. Rosinus.

Χ. 2. *Ejusdem Censui Turbines. Ex eadem Marga.* Mr. Rosinus.

Χ. 3. *Opercula quibus praedicti Turbines olim claudebantur. Ex eadem Marga.* Mr. Rosinus.

Χ. 4. *Buccina lacustria ventricosa. Ex eadem Marga.* Mr. Rosinus.

Χ. 5. *Alia, magis oblonga. Ex eadem quoque Marga.* Mr. Rosinus.

Χ. 6. *Musculus fluviatilis prope Arcem Herrenhausen ad viginti Cubitorum Profunditatem una cum alijs Conchylijs Belluarum praeter grandibus Ossis & Lignis, à Terra effossus.* Mr. Rosinus.

Χ. 7. *Musculus angustior, ex flavo viridescens, validus, umbonibus, acutis Valvarum Cardinibus velut Pinnis donatus sinuosus. Hist. Cochl. Fluv. Tit. 30. fossilis in Saxo cinereo, ex Turgovia  $\frac{1}{4}$  Hora à Stekborâ, Testis veluti calcinatis, adhuc superstitis.* Dr. Scheuchzer.

*Cochleae terrestres, ex telluris Visceribus eruta.*

ψ. 1. *Cochleae terrestres candida, prope Vallen in Hassia effossae, cum alijs similibus.* Mr. Rosinus.

ψ. 2. *Cochlites, ut videtur Cochleae terrestres. E Latomia prope Nordlingam, Suevorum.* Dr. Bayer.









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